

GRADUATE CATALOG

BRIGHAM YOUNG UNIVERSITY | 2016-2017



*Seek learning, even by study and also by faith;
D&C 109:7*

GRADUATE CATALOG

2016–2017

BRIGHAM YOUNG UNIVERSITY

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THE UNIVERSITY

BRIGHAM Young University offers an exceptional educational opportunity for the well-prepared graduate student who is seeking an environment where learning experiences with dedicated scholars characterize graduate study. Established and sponsored by The Church of Jesus Christ of Latter-day Saints, BYU is the largest privately owned university in the United States. The university president, Kevin J. Worthen, is directly responsible to the board of trustees, led by the president of The Church of Jesus Christ of Latter-day Saints and composed of Church authorities. In a time of constantly changing human values and increased challenges for higher education, BYU holds steadfastly to a singular vision that combines reasoned and revealed learning. Along with extensive undergraduate programs, BYU offers master's and doctoral degrees in a variety of disciplines through approximately fifty graduate departments.

Founded in 1875 as Brigham Young Academy, the campus has grown from one building to 500 buildings on more than 600 acres. Its first class of twenty-nine students was taught by the academy's founding scholar, Karl G. Maeser. Now more than 1,500 full-time faculty instruct 33,000 students. From its modest beginnings Brigham Young University has grown to become a distinguished institution of private higher education. At BYU teaching and scholarly research are valued as essential complements of one another. Faculty and students work side by side in collegial scholarship enhanced by mutual commitment to the highest ideals of professional ethics and spiritual values.

Situated at the foot of the beautifully rugged Wasatch Range of the Rocky Mountains and bounded on the west by twenty-three-mile-long Utah Lake, the campus is the focal point of a city of 118,000 and a valley of 540,000. Beyond it to the south and east are spectacular areas of vast sandstone canyons and monoliths, several of which are national parks. Forty-five miles north is Salt Lake City.

The faculty at BYU have been schooled at some of the leading universities of the nation as well as of other countries, and many of them have achieved national and international prominence as teachers and scholars.

MISSION OF BRIGHAM YOUNG UNIVERSITY

THE mission of Brigham Young University—founded, supported, and guided by The Church of Jesus Christ of Latter-day Saints—is to assist individuals in their quest for perfection and eternal life. That assistance should provide a period of intensive learning in a stimulating setting where a commitment to excellence is expected and the full realization of human potential is pursued.

All instruction, programs, and services at BYU, including a wide variety of extracurricular experiences, should make their own contribution toward the balanced development of the total person. Such a broadly prepared individual will not only be capable of meeting personal challenge and change but will also bring strength to others in the tasks of home and family life, social relationships, civic duty, and service to mankind.

To succeed in this mission the university must provide an environment enlightened by living prophets and sustained by those moral virtues which characterize the life and teachings of the Son of God. In that environment these four major educational goals should prevail:

- All students at BYU should be taught the truths of the gospel of Jesus Christ. Any education is inadequate which does not emphasize that His is the only name given under heaven whereby mankind can be saved. Certainly all relationships within the BYU community should reflect devout love of God and a loving, genuine concern for the welfare of our neighbor.
- Because the gospel encourages the pursuit of all truth, students at BYU should receive a broad university education. The arts, letters, and sciences provide the core of such an education, which will help students think clearly, communicate effectively, understand important ideas in their own cultural tradition as well as that of others, and establish clear standards of intellectual integrity.
- In addition to a strong general education, students should also receive instruction in the special fields of their choice. The university cannot provide programs in all possible areas of professional or vocational work, but in those it does provide the preparation must be excellent. Students who graduate from BYU should be capable of competing with the best in their fields.
- Scholarly research and creative endeavor among both faculty and students, including those in selected graduate programs of real consequence, are essential and will be encouraged.

In meeting these objectives BYU's faculty, staff, students, and administrators should also be anxious to make their service and scholarship available to The Church of Jesus Christ of Latter-day Saints in furthering its work worldwide. In an era of limited enrollments, BYU can continue to expand its influence both by encouraging programs that are central to the Church's purposes and by making its resources available to the Church when called upon to do so.

We believe the earnest pursuit of this institutional mission can have a strong effect on the course of higher education and will greatly enlarge Brigham Young University's influence in a world we wish to improve.

AIMS OF A BYU EDUCATION

*Education is the power to think clearly,
the power to act well in the world's work, and the power to appreciate life.*
--Brigham Young ¹

The mission of Brigham Young University is "to assist individuals in their quest for perfection and eternal life" (hereafter Mission Statement). To this end, BYU seeks to develop students of faith, intellect, and character who have the skills and the desire to continue learning and to serve others throughout their lives. These are the common aims of all education at BYU. Both those who teach in the classroom and those who direct activities outside the classroom are responsible for contributing to this complete educational vision.

The statement that follows reaffirms and expands on the earlier and more general Mission Statement adopted in 1981. As the quotations under each heading suggest, this document also draws on the religious and educational teachings of the university's founding prophet, Brigham Young. Quotations within the text come from the scriptures and from the counsel of modern prophets, whose teachings about BYU lay the foundation of the university's mission.

The following four sections discuss the expected outcomes of the BYU experience. A BYU education should be (1) spiritually strengthening, (2) intellectually enlarging, and (3) character building, leading to (4) lifelong learning and service. Because BYU is a large university with a complex curriculum, the intellectual aims are presented here in somewhat greater detail than the other aims. Yet they are deliberately placed within a larger context. The sequence flows from a conscious intent to envelop BYU's intellectual aims within a more complete, even eternal, perspective that begins with spiritual knowledge and ends with knowledge applied to the practical tasks of living and serving.

Spiritually Strengthening

*Brother Maeser, I want you to
remember that you ought not to teach even
the alphabet or the multiplication tables
without the Spirit of God.*
--Brigham Young ²

The founding charge of BYU is to teach every subject with the Spirit. It is not intended "that all of the faculty should be categorically teaching religion constantly in their classes, but . . . that every... teacher in this institution would keep his subject matter bathed in the light and color of the restored gospel." ³

This ideal arises from the common purpose of all education at BYU--to build testimonies of the restored gospel of Jesus Christ. A shared desire to "seek learning, even by study and also by faith" (D&C 88:118) knits BYU into a unique educational community. The students, faculty, and staff in this community possess a remarkable diversity of gifts, but they all think of themselves as brothers and sisters seeking together to master the academic disciplines while remaining mastered by the higher claims of discipleship to the Savior.

A spiritually strengthening education warms and enlightens students by the bright fire of their teachers' faith while enlarging their minds with knowledge. It also makes students responsible for developing their own testimonies by strenuous effort. Joseph Smith's words apply equally to faculty and students at BYU: "Thy mind, O man! if thou wilt lead a soul unto salvation, must stretch as high as the utmost heavens, and search into and contemplate the darkest abyss, and the broad expanse of eternity--thou must commune with God." ⁴ Students need not ignore difficult and important questions. Rather, they should frame their questions in prayerful, faithful ways, leading them to answers that equip them to give "a reason of the hope that is in" them (1 Peter 3:15) and to articulate honestly and thoughtfully their commitments to Christ and to his Church.

Intellectually Enlarging

*Every accomplishment, every polished grace, every useful attainment
in mathematics, music, and in all science and art belong to the Saints,
and they should avail themselves as expeditiously as possible of the wealth of knowledge the sciences offer to
every diligent and persevering scholar.*
--Brigham Young⁵

The intellectual range of a BYU education is the result of an ambitious commitment to pursue truth. Members of the BYU community rigorously study academic subjects in the light of divine truth. An eternal perspective shapes not only how students are taught but what they are taught. In preparing for the bachelor's degree, students should enlarge their intellects by developing skills, breadth, and depth: (1) skills in the basic tools of learning, (2) an understanding of the broad areas of human knowledge, and (3) real competence in at least one area of concentration. Further graduate studies build on this foundation.

Undergraduate

1. Skills. BYU undergraduates should acquire the basic tools needed to learn. The essential academic learning skills are the abilities to think soundly, to communicate effectively, and to reason proficiently in quantitative terms. To these ends, a BYU bachelor's degree should lead to:

- Sound thinking--reasoning abilities that prepare students to understand and solve a wide variety of problems, both theoretical and practical. Such skills include the ability to keep a proper perspective when comparing the things that matter most with things of lesser import. They also include the ability to engage successfully in logical reasoning, critical analysis, moral discrimination, creative imagination, and independent thought.
- Effective communication--language abilities that enable students to listen, speak, read, and write well; to communicate effectively with a wide range of audiences in one's area of expertise as well as on general subjects. For many students this includes communicating in a second language.
- Quantitative reasoning--numerical abilities that equip students with the capacity to understand and explain the world in quantitative terms; to interpret numerical data; and to evaluate arguments that rely on quantitative information and approaches.

2. Breadth. BYU undergraduates should also understand the most important developments in human thought as represented by the broad domains of knowledge. The gospel provides the chief source of such breadth because it encompasses the most comprehensive explanation of life and the cosmos, supplying the perspective from which all other knowledge is best understood and measured. The Lord has asked his children to "become acquainted with all good books, and with languages, tongues, and people" (D&C 90:15); to understand "things both in heaven and in the earth, and under the earth; things which have been, things which are, things which must shortly come to pass; things which are at home, things which are abroad; the wars and the perplexities of the nations . . . ; and a knowledge also of countries and of kingdoms" (D&C 88:79). "Because the gospel encourages the pursuit of all truth, students at BYU should receive a broad university education [that will help them] understand important ideas in their own cultural tradition as well as that of others" (Mission Statement). Specifically, BYU undergraduate students should be educated in the following broad areas of human knowledge:

- Religion--the doctrines, the covenants, the ordinances, the standard works, and the history of the restored gospel, as well as an awareness of other religious traditions.
- Historical perspective --the development of human civilization, appreciation for the unique contributions of America to modern civilization, and a general historical perspective, including perspective on one's own discipline.
- Science--the basic concepts of the physical, biological, and social sciences, and a recognition of the power and limitations of the scientific method- preferably through laboratory or field experience.

- Arts and Letters --lively appreciation of the artistic, literary, and intellectual achievements of human cultures--including Western culture and, ideally, non-Western as well.
- Global awareness --informed awareness of the peoples, cultures, languages, and nations of the world.

3. Depth. BYU undergraduates should develop competence in at least one area of concentration. Competence generally demands study in depth. Such in-depth study helps prepare students for their life's work; it also teaches them that genuine understanding of any subject requires exploring it fully. Students normally acquire such depth from their major and minor fields. BYU's religion requirement also asks all students to develop depth in scriptural studies and religion. Depth does not result merely from taking many courses in a field. Indeed, excessive course coverage requirements may discourage rather than enhance depth. Depth comes when students realize "the effect of rigorous, coherent, and progressively more sophisticated study." Depth helps students distinguish between what is fundamental and what is only peripheral; it requires focus, provides intense concentration, and encourages a "lean and taut" degree that has a "meaningful core" and a purposefully designed structure (Memorandum to the Faculty No. 13). In addition to describing carefully structured academic majors, this description applies to well-designed BYU courses of all kinds. The chief result of depth is competence. BYU's students should be "capable of competing with the best students in their field" (Mission Statement). Even so, undergraduate study should be targeted at entrance-level, not expert-level, abilities. The desire for depth should not lead to bachelor's degrees that try to teach students everything they will need to know after graduation. Students should be able to complete their degrees within about four years. Undergraduate programs should prepare students to enter the world of work or to pursue further study. Often this requires educational activities that help upperclassmen culminate their studies by integrating them in a capstone project, honors thesis, senior seminar, or internship. By the time they graduate, students should grasp their discipline's essential knowledge and skills (such as mathematical reasoning, statistical analysis, computer literacy, foreign language fluency, laboratory techniques, library research, and teaching methods), and many should have participated in scholarly or creative activities that let them demonstrate their mastery.

Graduate

Building on the foundation of a strong bachelor's degree, graduate education at BYU asks for even greater competency. Graduate studies may be either academic or professional and at either the master's or doctoral level. In all cases, BYU graduate programs, like undergraduate programs, should be spiritually strengthening as well as intellectually enlarging. Graduate programs should help students achieve excellence in the discipline by engaging its primary sources; mastering its literature, techniques, and methodologies; and undertaking advanced systematic study - all at a depth that clearly exceeds the undergraduate level. In addition, graduate programs should prepare students to contribute to their disciplines through their own original insights, designs, applications, expressions, and discoveries. Graduate study should thereby enable a variety of contributions - such as teaching complex knowledge and skills, conducting original research, producing creative work that applies advanced learning in the everyday world, and extending professional service to the discipline and to society.

* * *

These intellectual aims of a BYU education are intended to give students understanding, perspective, motivation, and interpersonal abilities--not just information and academic skills. BYU should furnish students with the practical advantage of an education that integrates academic skills with abstract theories, real-world applications, and gospel perspectives. Such an education prepares students who can make a difference in the world, who can draw on their academic preparation to participate more effectively in the arenas of daily life. They are parents, Church leaders, citizens, and compassionate human beings who are able to improve the moral, social, and ecological environment in which they and their families live. They are scientists and engineers who can work effectively in teams and whose work reflects intellectual and moral integrity; historians who write well and whose profound understanding of human nature and of divine influences informs their interpretation of human events; teachers whose love for their students as children of God is enriched by global awareness and foreign language skill; artists whose performances seek to be flawless in both technique and inspiration; business leaders whose economic judgments and management

styles see financial reward not as an end but as a means to higher ends. BYU graduates thus draw on an educated intellect to enhance not only what they know but also what they do and, ultimately, what they are.

Character Building

*A firm, unchangeable course of righteousness
through life is what secures to a person true intelligence.
--Brigham Young⁶*

Because it seeks to educate students who are renowned for what they are as well as for what they know, Brigham Young University has always cared as much about strong moral character as about great mental capability. Consequently, a BYU education should reinforce such moral virtues as integrity, reverence, modesty, self-control, courage, compassion, and industry. Beyond this, BYU aims not merely to teach students a code of ethics but to help them become partakers of the divine nature. It aspires to develop in its students character traits that flow from the long-term application of gospel teachings to their lives. This process begins with understanding humankind's eternal nature and ends with the blessing of eternal life, when human character reflects in fully flowered form the attributes of godliness. Along the way, the fruits of a well-disciplined life are augmented and fulfilled by the fruits of the spirit of Jesus Christ--such as charity, a Christlike love for others, which God "hath bestowed upon all who are true followers of his Son, Jesus Christ" (Moroni 7:48). Students thus perfect their quest for character development by coming unto Christ through faith, repentance, and righteous living. Then their character begins to resemble his, not just because they think it should but because that is the way they are. President David O. McKay taught that character is the highest aim of education: above knowledge is wisdom, and above wisdom is character. "True education," he explained, "seeks to make men and women not only good mathematicians, proficient linguists, profound scientists, or brilliant literary lights, but also honest men with virtue, temperance, and brotherly love."⁷ Consequently, a BYU education should bring together the intellectual integrity of fine academic discipline with the spiritual integrity of personal righteousness. The result is competence that reflects the highest professional and academic standards--strengthened and ennobled by Christlike attributes.

Thus understood, the development of character is so important that BYU "has no justification for its existence unless it builds character, creates and develops faith, and makes men and women of strength and courage, fortitude, and service--men and women who will become stalwarts in the Kingdom and bear witness of the . . . divinity of the gospel of Jesus Christ. It is not justified on an academic basis only."⁸ Rather, it fulfills its promise when "the morality of the graduates of this University provide[s] the music of hope for the inhabitants of this planet."⁹

Every part of the BYU experience should therefore strengthen character--academic integrity in taking a test or writing a research paper; sportsmanship on the playing field; the honest reporting of research findings in a laboratory; careful use of university funds derived from the tithes of Church members; treating all other people with dignity and fairness; and wholehearted acceptance of commitments made to bishops and parents. Character is constructed by small decisions. At this personal level of detail, BYU will realize its hope of teaching "those moral virtues which characterize the life and teachings of the Son of God" (Mission Statement).

Lifelong Learning and Service

*We might ask, when shall we cease to learn?
I will give you my opinion about it;
never, never. . . . We shall never cease to learn, unless
we apostatize from the religion of Jesus Christ.
--Brigham Young¹⁰*

*Our education should be such as to
improve our minds and fit us for increased usefulness;
to make us of greater service to the human family.
--Brigham Young¹¹*

Well-developed faith, intellect, and character prepare students for a lifetime of learning and service. By “entering to learn” and continuing to learn as they “go forth to serve,” BYU students strengthen not only themselves - they “also bring strength to others in the tasks of home and family life, social relationships, civic duty, and service to mankind” (Mission Statement).

1. Continual Learning. BYU should inspire students to keep alive their curiosity and prepare them to continue learning throughout their lives. BYU should produce careful readers, prayerful thinkers, and active participants in solving family, professional, religious, and social problems. They will then be like Abraham of old, who had been “a follower of righteousness, desiring also to be one who possessed great knowledge, and to be a greater follower of righteousness, and to possess a greater knowledge, . . . desiring to receive instructions, and to keep the commandments of God.” In this lifelong quest, they, like Abraham, will find “greater happiness and peace and rest” (Abraham 1:2). Thus a BYU diploma is a beginning, not an end, pointing the way to a habit of constant learning. In an era of rapid changes in technology and information, the knowledge and skills learned this year may require renewal the next. Therefore, a BYU degree should educate students in how to learn, teach them that there is much still to learn, and implant in them a love of learning “by study and also by faith” (D&C 88:118).

2. Service. Since a decreasing fraction of the Church membership can be admitted to study at BYU, it is ever more important that those who are admitted use their talents to build the kingdom of God on the earth. Hence, BYU should nurture in its students the desire to use their knowledge and skills not only to enrich their own lives but also to bless their families, their communities, the Church, and the larger society. Students should learn, then demonstrate, that their ultimate allegiance is to higher values, principles, and human commitments rather than to mere self-interest. By doing this, BYU graduates can counter the destructive and often materialistic self-centeredness and worldliness that afflict modern society. A service ethic should permeate every part of BYU’s activities - from the admissions process through the curriculum and extracurricular experiences to the moment of graduation. This ethic should also permeate each student’s heart, leading him or her to the ultimate wellspring of charity--the love for others that Christ bestows on his followers.

Conclusion

*Education is a good thing, and blessed is
the man who has it, and can use it for the dissemination
of the Gospel without being puffed up with pride.
--Brigham Young¹²*

These are the aims of a BYU education. Taken together, they should lead students toward wholeness: “the balanced development of the total person” (Mission Statement). These aims aspire to promote an education that helps students integrate all parts of their university experience into a fundamentally sacred way of life--their faith and reasoning, their knowledge and conduct, their public lives and private convictions. Ultimately, complete wholeness comes only through the Atonement of him who said, “I am come that they might have life, and that they might have it more abundantly” (John 10:10). Yet a university education, guided by eternal principles, can greatly “assist individuals in their quest for” that abundant “eternal life” (Mission Statement). A commitment to this kind of education has inspired the prophets of the past to found Church schools, like BYU, on the principle that “to be learned is good if they hearken unto the counsels of God” (2 Nephi 9:29). These prophets have known the risks of such an enterprise, for “that happiness which is prepared for the saints” shall be hid forever from those “who are puffed up because of their learning, and their wisdom” (see 2 Nephi 9:42-43). Yet they have also known that education plays a vital role in realizing the promises of the Restoration; that a broad vision of education for self-reliance and personal growth is at the very heart of the gospel when the gospel is at the heart of education. To the degree that BYU achieves its aims, the lives of its students will confirm Brigham Young’s confidence that education is indeed “a good thing,” blessing all those who humbly and faithfully use it to bless others.

Notes

1. Brigham Young, quoted by George H. Brimhall in "The Brigham Young University," *Improvement Era*, vol. 23, no. 9 (July 1920), p. 831.
2. Brigham Young, in Reinhard Maeser, *Karl G. Maeser: A Biography* (Provo: Brigham Young University, 1928), p. 79.
3. Spencer W. Kimball, "Education for Eternity," *Preschool Address to BYU Faculty and Staff*, 12 September 1967, p. 11.
4. Joseph Smith, *Teachings of the Prophet Joseph Smith*, sel. Joseph Fielding Smith (Salt Lake City: Deseret Book Company, 1972), p. 137.
5. Brigham Young, *Journal of Discourses* (hereafter JD), vol. 10 (London: Latter-day Saints' Book Depot, 1854-86), p. 224.
6. Brigham Young, JD 8:32.
7. David O. McKay, "Why Education?" *Improvement Era*, vol. 70, no. 9 (September 1967), p. 3.
8. Spencer W. Kimball, "On My Honor," in *Speeches of the Year 1978* (Provo: Brigham Young University Press: 1979), p. 137.
9. Spencer W. Kimball, "Second Century Address and Dedication of Carillon Tower and Bells," *Brigham Young University*, 10 October 1975, p. 12.
10. Brigham Young, JD 3:203.
11. Brigham Young, JD 14:83.
12. Brigham Young, JD 11:214.

Honor Code

The university expects that all students, regardless of religion, will maintain the behavioral standards of the school, including the Honor Code. These include high standards of honesty, integrity, chastity, morality, and dress and grooming, in addition to abstinence from alcoholic beverages, tobacco, tea, coffee, and substance abuse. The Honor Code Statement is found here: <https://policy.byu.edu/view/index.php?p=26>



FROM THE PRESIDENT

Welcome to Brigham Young University. This catalog contains information about BYU's graduate degree requirements, policies, and course offerings, as well as the University's distinctive mission, which reflects the values of our sponsoring institution, The Church of Jesus Christ of Latter-day Saints.

BYU's graduate study programs are designed to provide a depth of disciplinary knowledge, a breadth of scientific and creative discovery, and the rigor of individual and collective investment where teachers and students work together as partners in significant endeavors. Through graduate study, you become not only a consumer of, but also a contributor to, the world's store of knowledge. Please take advantage of the tremendous resources available to you on campus. Through devoted study, observation, and contemplation, your disciplinary skills will be expanded and enhanced, and your life will be changed forever.

We are delighted that you have chosen to pursue your graduate studies here. May your experience provide not only the opportunity, but also the ability, to make a difference in the world. Best wishes as you begin this new journey of discovery and enlightenment.

A handwritten signature in black ink that reads "Kevin Worthen". The script is fluid and cursive, with the first name "Kevin" and last name "Worthen" clearly distinguishable.

Kevin J Worthen

CATALOG TERMS AND ABBREVIATIONS

The following terms and abbreviations are used throughout the catalog:

Course Number. This catalog does not list courses numbered below 500. For listings of undergraduate courses, see the BYU Undergraduate Catalog. Courses numbered below 500 are undergraduate courses, courses numbered 500–599 are either graduate courses or advanced undergraduate courses, and courses numbered 600 and above (600–799) are graduate courses. Most, but not all, 500-level courses can count toward a graduate degree.

R. An R following the course number designates a course that may be repeated for credit.

Credit Hour Designation. The number that follows each course title is the number of semester hours of credit designated for the class.

Areas of Study Abbreviations

Accounting	Acc
Anthropology	Anthr
Art	Art
Art Education	Arted
Biology	Bio
Chemical Engineering	Ch En
Chemistry and Biochemistry	Chem
Civil and Environmental Engineering	CE En
Communication Disorders	ComD
Communications	Comms
Comparative Arts and Letters	
Art History and Curatorial Studies	Arthc
Comparative Studies	Cmpst
Computer Science	C S
Counseling Psychology and	
Special Education	CPSE
Economics	Econ
Educational Leadership and	
Foundations	EdLF
Electrical and Computer Engineering	EC En

English	Engl
Exercise Sciences	ExSc
School of Family Life	
Marriage and Family Therapy	MFT
Marriage, Family, and Human	
Development	MFHD
Geological Sciences	Geol
Health Science	Hlth
Information Systems	I Sys
Instructional Psychology and	
Technology	IP&T
Language Studies	SLaT
Languages	
Arabic	Arab
Chinese	Chin
French	Fren
German	Germ
Greek	Greek
Hebrew	Heb
Italian	Ital
Latin	Latin
Portuguese	Port
Russian	Russ
Spanish	Span
Law School	Law
Linguistics and English Language	Ling
English Language	ELang
Teaching English to Students	
of Other Languages	TESOL
Management	Mgt
Mathematics	Math
Mathematics Education	MthEd
Mechanical Engineering	Me En
Microbiology and Molecular	
Biology	MMBio
Music	Music
Neuroscience Center	Neuro
Nursing	Nurs
Nutrition, Dietetics, and Food	
Science	NDFS
Physics and Astronomy	Phscs

Physiology and Developmental	
Biology	PDBio
Plant and Wildlife Sciences	PWS
Psychology	Psych
Public Management	P Mgt
Recreation Management	RMYL
Religious Education	Rel E
Ancient Scripture.....	Rel A
Church History and Doctrine.....	Rel C
Social Work.....	Soc W
Sociology.....	Soc
Statistics.....	Stat
Teacher Education.....	T Ed
Elementary Education	El Ed
Secondary Education	Sc Ed
School of Technology	
Construction Management.....	CM
Information Technology.....	IT
Manufacturing Engineering	
Technology.....	Mfg
Technology.....	Tech
Theatre and Media Arts.....	TMA

COLLEGES AND SCHOOLS

EDUCATION, DAVID O. MCKAY SCHOOL OF

301 MCKB
Provo, UT 84602-5095
(801) 422-3694

Dean: Mary Anne Prater, Professor, Counseling Psychology and Special Education
Associate Dean, Graduate Studies: Tina Dyches, Associate Professor, Counseling Psychology and Special Education

The departments in the McKay School of Education offer the following graduate degrees:

Communication Disorders

MS Communication Disorders

Counseling Psychology and Special Education

MS Special Education

EdS School Psychology

PhD Counseling Psychology

Educational Leadership and Foundations

MEd, EdD Educational Leadership

Instructional Psychology and Technology

MS, PhD Instructional Psychology and Technology

Teacher Education

MA Teacher Education

The following college-wide degree is available through the McKay School of Education

PhD Education Inquiry Measurement and Evaluation

ENGINEERING AND TECHNOLOGY, IRA A. FULTON COLLEGE OF

270 CB
Provo, UT 84602-1345
(801) 422-4101

Dean: Michael Jensen, Professor, Electrical Engineering

Associate Dean, Graduate Studies: Larry Howell, Professor, Mechanical Engineering

The departments and school in the College of Engineering and Technology offer the following graduate degrees:

Chemical Engineering

MS, PhD Chemical Engineering

Civil and Environmental Engineering

MS, PhD Civil Engineering

Electrical and Computer Engineering

MS, PhD Electrical and Computer Engineering

Mechanical Engineering

MS, PhD Mechanical Engineering

Technology, School of

MS Technology

FAMILY, HOME, AND SOCIAL SCIENCES, COLLEGE OF

990 SWKT
Provo, UT 84602-5535
(801) 422-2083

Dean: Benjamin M. Ogles, Professor, Psychology
Associate Dean, Graduate Studies and

Curriculum: Susanne Olsen Roper, Associate
Professor, Family Life

Associate Dean, Research: Shawn Miller, Associate
Professor, History

The College of Family, Home, and Social Sciences
offer the following graduate degrees:

Anthropology

MA Anthropology
Cert Museum Practices

Family Life, School of

MS, PhD Marriage, Family, and Human
Development

MS, PhD Marriage and Family Therapy

Psychology

PhD Clinical Psychology
PhD Psychology

Social Work, School of

MSW Social Work

Sociology

MS Sociology

FINE ARTS AND COMMUNICATIONS, COLLEGE OF

A-501 HFAC
Provo, UT 84602-6302
(801) 422-2819

Dean: Ed Adams, Professor, Communications
Associate Dean: Jeremy Grimshaw, Associate
Professor, Music

The departments and school in the College of Fine
Arts and Communications offer the following
graduate degrees:

Communications

MA Mass Communications

Music, School of

MA, MM Music

Theatre and Media Arts

MA Theatre and Media Arts

Visual Arts

MA Art Education
MFA Studio Art

HUMANITIES, COLLEGE OF

4002 JFSB
Provo, UT 84602-6704
(801) 422-2775

Dean: Scott Miller, Asian and Near Eastern Languages
Associate Dean: George Handley, Professor, Humanities
Associate Dean: Ray T. Clifford, Director, Center for Language Studies
Associate Dean: Scott Sprenger, Professor, French and Italian

The departments in the College of Humanities offer the following graduate degrees:

Art History and Curatorial Studies

MA Art History and Curatorial Studies

English

MA English
MFA Creative Writing

French and Italian

MA French Studies

Comparative Arts and Letters

MA Comparative Studies

Center for Language Studies

MA Second Language Teaching (SLaT)

Linguistics and English Language

MA Linguistics
MA Teaching English to Speakers of Other Languages

Spanish and Portuguese

MA Portuguese
MA Spanish

LAW SCHOOL, J. REUBEN CLARK

341 JRCB
Provo, UT 84602-8000
(801) 422-4274

Dean: D. Gordon Smith, Professor of Law, Business Associations
Associate Dean: Gayla Sorenson
Assistant Dean: Brett G. Scharffs, Professor of Law, Business Organizations
Assistant Dean: Michelle Mumford

Juris Doctorate (JD)

The J. Reuben Clark Law School offers a six-semester course of graduate professional study leading to the juris doctorate (JD) degree. Information about legal education, admissions standards and procedures, and related matters can be obtained from the admissions office of the Law School, 340 JRCB, Provo, UT, 84602-8000, or by visiting the Law School's website located at www.law2.byu.edu/admissions/newstudents.php.

Master of Law (LLM)

The master of law (LLM) degree is conferred upon successful completion of a minimum 24 credit hours earned during at least two semesters in residence following completion of a JD degree or its equivalent outside the United States. Information and applications are available through the admissions office of the Law School, 340 JRCB, Provo, UT 84602-8000, or by visiting the Law School's website at www.law2.byu.edu/admissions/newstudents.php.

LIFE SCIENCES, COLLEGE OF

5000 LSB
Provo, UT 84602-5250
(801) 422-3963

Dean: James P. Porter, Professor, Physiology and Developmental Biology

Associate Dean, Graduate Studies: Laura Bridgewater, Professor, Transcriptional Regulation and Developmental Biology

The departments in the College of Life Sciences offer the following graduate degrees:

Biology

MS Biological Science Education
MS, PhD Biology

Exercise Sciences

MS, PhD Exercise Sciences

Health Science

MPH Public Health

Microbiology and Molecular Biology

MS, PhD Microbiology and Molecular Biology

Nutrition, Dietetics, and Food Science

MS Food Science
MS Nutritional Science

Physiology and Developmental Biology

MS, PhD Neuroscience
MS, PhD Physiology and Developmental Biology

Plant and Wildlife Sciences

MS Environmental Science
MS Genetics and Biotechnology
MS, PhD Wildlife and Wildlands Conservation

MANAGEMENT, MARRIOTT SCHOOL OF

730 TNRB
Provo, UT 84602-3113
(801) 422-4121

Dean: Lee Perry, Professor, Business

Associate Dean: Michael P. Thompson, Associate Professor, Organizational Leadership and Strategy

The Marriott School includes five professional programs:

Accountancy

MAcc Professional Accountancy
MAcc Tax

Business Administration

MBA, EMBA Business Administration

Information Systems

MISM Information Systems Management

Public Management, Romney Institute of

MPA, EMPA Public Administration

Recreation Management

MS Recreation Management

NURSING, COLLEGE OF

NURSING, COLLEGE OF

400 SWKT
Provo, UT 84602-5532
(801) 422-4144

Dean: Patricia K. Ravert, Professor
Associate Dean, Graduate Affairs: Mary Williams,
Associate Professor, Nursing

The College of Nursing offers a nationally accredited program leading to the Master of Science degree.

MS Nursing

PHYSICAL AND MATHEMATICAL SCIENCES, COLLEGE OF

N-181 ESC
Provo, UT 84602-4605
(801) 422-2674

Dean: Scott D. Summerfeldt, Professor, Physics
Associate Dean: Tom Sederberg, Professor,
Computer Science
Associate Dean: Bart J. Kowallis, Professor,
Geological Sciences

The departments in the College of Physical and Mathematical Sciences offer the following graduate degrees:

Chemistry and Biochemistry

MS, PhD Biochemistry
MS, PhD Chemistry

Computer Science

MS, PhD Computer Science

Geological Sciences

MS Geology

Mathematics

MS, PhD Mathematics

Mathematics Education

MA Mathematics Education

Physics and Astronomy

MS, PhD Physics
PhD Physics and Astronomy

Statistics

MS Statistics

RELIGIOUS EDUCATION

370 JSB

Provo, UT 84602-5693

(801) 422-2735

Dean: Brent Top, Professor, LDS Doctrine

Associate Dean: Dana Pike, Professor, Near Eastern
Studies

Associate Dean: Robert Freeman, Professor, 20th
Century Church History

Religious Education offers the following graduate
degrees:

MAReligious Education

MAReligious Studies-Military Chaplaincy

ACCOUNTANCY

Director: Wilks, T. Jeffrey
Associate Director: Cottrell,
David M.

560 TNRB, Provo, UT 84602-3068
(801) 422-3951
soa@byu.edu
<http://marriottschool.byu.edu/macc>

THE PROGRAMS OF STUDY

The School of Accountancy (SOA) administers one graduate program through the Marriott School: the Master of Accountancy-MAcc.

The Master of Accountancy program offers a general background in accounting, with an emphasis on business-related subjects and an in-depth study of one or more areas of accounting. The MAcc degree is awarded on completion of a professional program, which can begin as early as the junior year of the undergraduate program, and culminates in the Marriott School after the fifth year. Students entering the SOA program with a baccalaureate degree in accounting can complete the program in less than two years.

The objective of the program is to develop graduates who exhibit professionalism and are qualified with specialized knowledge in one or more accounting areas.

The School of Accountancy seeks to educate individuals who are:

- Imbued with a strong sense of professional commitment
- Qualified with specialized knowledge in the areas of accounting or tax
- Committed to continued professionalism-beyond formal education
- Capable of becoming leaders who exhibit high standards of ethical conduct within their chosen profession.

Two emphases are offered within the MAcc program: Professional Accountancy and Tax. The Professional Accountancy emphasis is designed for students who wish to gain a broad base of graduate accounting training. Students typically seek accounting positions in auditing, management, not-for-profit, or PhD programs. Tax emphasis graduates usually begin careers in the tax area of public accounting firms.

The School of Accountancy admits approximately 160 students per year into its graduate program.

Accountancy - Professional - MAcc

Common requirements: Marriott School Graduate Core consisting of BUS M 520, 530, 540, 550, 581, 582.

Professional Accountancy: ACC 515, 522, 525, 530, 531, 540, 541. Finance elective: MBA 621-629 (choose one); MAcc Electives: 6 hours from the Professional Accounting elective course list; Marriott School electives: 6 hours from the elective course list.

FINANCIAL ASSISTANCE

The School of Accountancy utilizes the Marriott School's financial aid provisions. Qualified students can receive aid from the following: the Marriott School Scholarship Fund, private scholarship donations, assistantship awards, and loan assistance.

Scholarships. The Marriott School of Management offers scholarships to Marriott School students through the college, departments and programs. One application online at marriottschool.byu.edu/aid allows students to apply for all scholarships the Marriott School offers.

Assistantships. Research and teaching assistantships are available for qualified second-year students.

Loans. Several loans are available for Marriott School students:

- Marriott School Loans: available to full-time Marriott School day students. Marriott School loans are handled on an individual basis, dependent on financial need and standing within the participating program.
- BYU Short-Term Loans: available for up to the cost of tuition only.
- Federal Stafford Loans: subsidized by the U.S. government. Not available for international students. More information on and applications for these loans are available from the BYU Financial Aid Office, A-41 ASB, (801) 422-4104, e-mail: financial_aid@byu.edu.

RESOURCES AND OPPORTUNITIES

The N. Eldon Tanner Building. The Tanner Building, which houses the Marriott School, is one of the finest facilities of its kind. The original building with a dramatic seven-story atrium was recently updated with a new four-story addition. The addition boasts thirty-nine team study rooms, six large case rooms, the Blue Line Deli, and adds 76,000 square feet to the existing building.

The Marriott School of Management. The Marriott School is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication, and they fill leadership positions in a number of national professional organizations. The school has developed innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice. This is accomplished, in part, through the Marriott School's National Advisory Council.

National Advisory Council. Consisting of more than 160 prominent business and government executives, the National Advisory Council lends major support to the Marriott School. Students benefit by interacting with council members in special campus lectures and seminars and by visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.

The Executives on Campus Program. This program gives students an opportunity to interact with distinguished business and government leaders who come to campus. These executives visit classes and meet with student organizations as well as participate in the Executive Lecture Series and Entrepreneurship Lecture Series.

COURSE DESCRIPTION

ACC

503.Advanced Financial Accounting. (3)

Advanced financial accounting topics including pensions, earnings per share, accounting changes, and deferred income taxes. Marriott School Graduate Core.

515.Accounting Research Seminar. (3)

Professional standards and professional literature of accounting and auditing; related academic research. Research tools, information technologies, and critical analysis emphasized. Admission to MAcc.

516.Introduction to Academic Research. (3)

Fundamentals of academic research, including the scientific method, the philosophy of science, and the areas and methodologies of academic research. Admission to the MAcc predoctoral track.

517.Academic Research Applications. (1)

Basic SAS programming; practice using Compustat and CRSP databases; performing archival research. ACC 516; Admission to the MAcc predoctoral track.

518.Academic Experimental Research Design. (1.5)

In-depth study of accounting research using experimental methodologies. Focus on reading, interpreting, critiquing, and designing experimental research. Designed for those planning to enter a PhD program. SOA director's consent.

522.Advanced Taxation. (3)

Tax laws as they apply to selected tax entities, with an introduction to tax research methodology. Marriott School Graduate Core.

523.Tax Research Methodology. (3)

In-depth treatment of research and procedures emphasizing communication and presentation of findings. Admission to MAcc.

525.Accounting Information Systems Risk and Control. (3)

Understanding the risks involved in accounting information systems and the proper design, documentation, and validation of mitigating controls. Theory and application. Admission to MAcc.

530.Advanced Financial Statement Auditing. (3)

Accounting methodology, professional auditing standards, and current issues. Admission to MAcc; Acc 515 or equivalent.

531.Advanced Management Accounting. (1.5)

Advanced concepts, including the role of accounting in strategic and operational decision-making. Marriott School Graduate Core; Acc 515 or equivalent.

540.Advanced Professional Financial Accounting. (3)

Advanced financial accounting topics including pensions, earnings per share, accounting changes, and deferred income taxes. Marriott School Graduate Core; Acc 515 or equivalent.

541.Financial Statement Analysis. (1.5)

Analysis of financial statements and the accompanying footnotes. How various accounting methods might affect interpretation and use of financial information.

542.Fair Value and Other Measurements in Accounting. (3)

Case-based course that examines theoretical and practical issues surrounding fair value and other measurement issues. Focuses on techniques used in practice for measuring financial instruments, acquisitions, revenue recognition, and asset impairments, among others. ACC 515 & ACC 530

545.International Accounting and Multinational Enterprises. (3)

Accounting from an international perspective: flow of information in multiple currencies, complying with reporting requirements, setting budgets and monitoring performance, and controlling corporate assets through reports and audits.

ACCOUNTANCY

550.Fraud Prevention and Detection. (3)

Fraud prevention, detection, investigation, issues, and methodology. Examination of past frauds with hands-on cases and computer exercises to identify increased fraud risk, interrogate data, and design prevention and detection controls.

555.Data Communications and Security. (3)

Principles of data communication and security, local- and wide-area networks, hardware, software, infrastructure, standards, policies, baseline security, web security, cryptography, operations, and security management. Admission to MAcc.

556.Database Analysis and Design. (3)

Concepts and techniques of database system development. Focal areas include: structures, integrity, retrieval, manipulation, validation, and analysis. SQL used as basis for data interrogation. Admission to a Marriott School graduate program.

557.Management Consulting and Projects. (3)

Projects-oriented course where students get hands-on experience performing consulting jobs for businesses in Utah. Class includes both in-class instruction and business experience. Admission to MAcc.

560.Special Problems in Federal Taxation. (3)

Special property transactions, accounting periods and methods, tax payments and credit, tax concepts, and reporting tax liability. ACC 523.

561.Corporate Taxation 1. (3)

Federal income taxation of corporations and shareholders. ACC 523.

562.Corporate Taxation 2. (3)

Continuation of Corporate Taxation 1. Includes consolidated returns.

563.Taxation of Partnerships. (3)

Federal income taxation of general and limited partnerships and partners. ACC 523.

564.Taxation of Estates, Gifts, and Fiduciaries. (3)

Federal taxation of property transferred by death and gift; federal taxation of income of trusts and estates. ACC 523.

565R.Current Tax Policy. (0.5-3)

Intensive study of special and current tax topics and policies. ACC 523.

566.Tax Accounting Methods and Accounting for Income Taxes. (3)

Accounting periods and methods, corporate income taxation, and accounting for income taxes under ASC 740. ACC 523.

568.Taxation of Foreign Income. (3)

Federal taxation of foreign transactions. Acc 561 or concurrent enrollment.

591R.Readings and Conference. (1-3)

In-depth study one-on-one with chosen professor on topic of mutual interest not currently covered in existing courses. SOA director's consent.

599R.Academic Internship: Accounting. (0.5-3)

On-the-job experience and training in industry, government, or public accounting firms. Internship coordinator's consent.

FACULTY

Barrick, John A. *Associate Professor*, PhD, University of Nebraska, Lincoln, 1998. Tax

Black, Ervin L. *Professor*, PhD, University of Washington, 1995. Financial

Burton, F. Greg *Professor*, PhD, University of South Carolina, 1994. Information Systems; Audit

Christensen, Theodore E. *Professor*, PhD, University of Georgia, 1995. Financial

Cottrell, David M. *Professor*, PhD, Ohio State University, 1992. Audit; Financial

Drake, Michael S. *Assistant Professor*, PhD, Texas A&M University, 2009. Financial

Gardner, Robert L. *Professor*, PhD, University of Texas, Austin, 1979. Tax

Glover, Steven M. *Professor*, PhD, University of Washington, 1994. Audit; Financial

Heninger, William G. *Associate Professor*, PhD, University of Georgia, 1997. Information Systems; Audit; Financial

Prawitt, Douglas F. *Professor*, PhD, University of Arizona, 1993. Audit

Smith, Steven D. *Associate Professor*, PhD, University of Florida, 2005. Managerial

Spilker, Brian C. *Professor*, PhD, University of Texas, Austin, 1993. Tax

Stewart, Bryan W. *Assistant Professor*, PhD, University of South Carolina, 2013. Tax

Stewart, Dave N. *Professor*, PhD, University of Florida, 1980. Tax

Stice, Earl Kay *Professor*, PhD, Cornell University, 1988. Financial

Stice, James D. *Professor*, PhD, University of Washington, 1989. Financial

Stocks, Kevin D. *Professor*, PhD, Oklahoma State University, 1981. Managerial

Summers, Scott L. *Professor*, PhD, Texas A&M University, 1995. Information Systems

Swain, Monte R. *Professor*, PhD, Michigan State University, 1991. Managerial

Taylor, William B. *Associate Professor*, PhD, Cornell University, 2007. Managerial

Wilks, Jeff *Professor*, PhD, Cornell University, 1996. Financial

Worsham, Ronald G. *Associate Professor*, PhD, University of Florida, 1994. Tax

Zimbelman, Mark F. *Professor*, PhD, University of Arizona, 1996. Audit; Financial

ANTHROPOLOGY

Chair: Nuckolls, Charles W.
Graduate Coordinator: Allison, James R.

800 SWKT, Provo, UT 84602-5522
(801) 422-3058

<https://anthropology.byu.edu/Pages/Home.aspx>

THE PROGRAMS OF STUDY

The graduate masters degree program in anthropology emphasizes archaeology. Additionally, the program offers students interested in professional training in museum studies the option to complete a Museum Studies Certificate in combination with their M.A. program in archaeological fieldwork.

Focusing on the emergence and development of hunter-gatherer and early farming communities in the western United States, as well as complex societies in Mesoamerica and the Near East, the program's strength is the diversity of research opportunities it affords students. These include research venues in the Great Basin and American Southwest regions of North America as well as Mesoamerica and the Near East. Museum internship opportunities are often available, both on and off campus, for students adding the Museum Certificate requirements to their program. Annual archaeology field schools focus on providing training in both survey and excavation, with an emphasis on detailed documentation, resolving field problems through hands-on mentored learning, data analysis, and reporting findings. The optional Museum Studies Certificate allows students hands-on professional training in all aspects of museum collections management, exhibition development, and museum public outreach.

Rather than emphasizing specialized or topical interests, the program equips each graduate student with the basic skills necessary for a future in professional archaeology and/or museum studies, including

preparation for continuance in academia through a subsequent Ph.D. degree in anthropology or archaeology, a career in public archaeology, or placement in a museum.

Up to six students are admitted to the graduate program each year. Most students take three years to complete the requirements. The total number of graduate students in the program varies from between 10 to 15 participants.

Anthropology - MA

Total Credit Hours Required (30):

A minimum of 24 hours of course work plus 6 thesis hours (Anthr 699R); A minimum of 20 hours (of the 24 noted above) must be taken under the direct instruction of professional anthropologists at BYU or in another acceptable department at the university. Thesis, readings, internship, and individual work do not count toward these 20 hours. Required and additional courses are noted below.

Required Core Courses: 18 hours from Anthr 500, 501, 502, 512, 695R, 699R.

Additional Courses: 6 hours from Anthr 530-590R, electives.

Examinations: (A) Oral examinations in conjunction with the thesis proposal; (B) Oral presentation of thesis proposal; (C) Oral defense of written thesis.

Final Written Thesis: 6 hours of Anthr 699R and successful completion of a masters level thesis.

FINANCIAL ASSISTANCE

The Department of Anthropology offers tuition assistance to all incoming graduate students. Additional support comes through assistantships, grants, and employment offered by the department and the Museum of Peoples and Cultures, but these funds are limited. The goal is to provide some support for as many students as possible rather than

generously support only a few. The Office of Public Archaeology (OPA) also regularly provides employment and valuable professional experience to students prepared to participate in contract archaeology projects.

RESOURCES AND OPPORTUNITIES

Museum of Peoples and Cultures.

Closely associated with the Anthropology Department, the Museum of Peoples and Cultures offers unique research opportunities for students and faculty, several of whom have research offices in the museum. Located south and west of the campus in Allen Hall, the museum holdings include important archaeological and ethnographic collections, some of which have not been systematically analyzed or published. These collections, which represent cultures of the Great Basin, the American Southwest, Mesoamerica, the Near East, and other parts of the world, provide material for thesis topics, museum certificate projects, professional publications, and academic credit. Publications produced by the Museum of Peoples and Cultures include a Technical Series, Occasional Papers, and a Popular Series. All publications are marketed by the University of Utah Press.

Office of Public Archaeology.

Housed in the Museum of Peoples and Cultures at Allen Hall, the Office of Public Archaeology (OPA) is one of the most active archaeological contracting organizations in the intermountain area. OPA exists to enrich the experience of students who emphasize archaeology. Since its inception in 1980, OPA has carried out small and large-scale projects throughout Utah, including recent long-term projects in Capitol Reef National Park and the Grand Staircase-Escalante National Monument.

OPA staff often participate in the department archaeological field school and regularly employ experienced students for projects. OPA research is authored by staff and students and published in the Museum of Peoples and Cultures Technical Series and Occasional Papers.

The New World Archaeological Foundation.

This foundation is a research institution focused on Formative Mesoamerican cultures, especially in Chiapas, Mexico. Established in 1952, the NWAf maintains a staff and research facilities in San Cristobal de las Casas, Chiapas. The NWAf publishes a monograph series (papers) to disseminate research findings. Graduate student opportunities through the foundation include laboratory research on campus and limited field work in Mexico and Guatemala.

Charles Redd Center for Western Studies.

Established in 1972 under an endowment from Charles Redd, a prominent Utah stockman and philanthropist, the center is charged with promoting the study of all aspects of the American West. The center publishes a monograph series, assists faculty and student research through grants and fellowships, and sponsors lectureships each year.

Examples of Current Faculty and Graduate Student Research Topics: Recent projects have addressed: socio-political complexity in Chiapas and Guatemala; development of complex society among the Maya; hunter-gatherer strategies in the arid west; economic patterns in small-scale societies in the greater southwest, and Nabataean society in Syro-Palestine.

COURSE DESCRIPTION

ANTHR

500. History of Archaeology.3

Historical approach to development of archaeological knowledge, method, and theory, emphasizing North America and individual contributions. Acceptance into the graduate program.

501. Current Archaeological Method and Theory.3

Major developments in archaeological method and theory, emphasizing current perspectives. Acceptance into the graduate program.

502. Quantitative Methods for Anthropology. (3)

Methods of organizing, exploring, and presenting data. Probability and statistical inference.

511. Museums and Cultures. (3)

Museums in society. Cultural foundations of museum content and sociology of museum use. Analyzing museum studies literature. Visits to and critiques of area museums. Final projects in real museums in the region.

512. Heritage Resource Management. (3)

Legal and ethical issues for practicing archaeologists. Preservation law, collections law, public archaeology, Native American issues, and careers in archaeology and museums. Admittance into graduate program in archaeology or certificate program in museum practices.

522. Museum Practices and Technologies. (3)

Core museum disciplines: collections management, curation, education, exhibition, and conservation. Supporting technologies: database, digital photography, Web design, etc. Career paths.

524.Museology: Curation and Writing. (3)

Professional practices supporting the educational, research, and reporting functions of museums, emphasizing museum writing leading to publication, cataloguing, policy writing, exhibition conceptualization, etc. Admission to certificate in museum practices program.

525.Museum Registration and Collections Management. (3)

Managing anthropological collections: object-handling, object-tracking, accessioning, deaccessioning, collections databases, loans, valuating collections, conservation environments, ethics, and NAGPRA and other laws relating to museums.

526.Museum Exhibitions and Programming. (3)

Instruction and practica in all aspects of exhibition development. Current thought and literature in museum education with practica for application.
ANTHR 524

530.Great Basin Archaeology. (3)

Overview of ethnography, history of research, and prehistory of the Great Basin culture area. Current issues in archaeological research emphasized.
Anthr 350 or equivalent.

535.Southwest Seminar. (3)

Overview of ethnography and prehistory of American Southwest. Current issues in archaeological research emphasized.
Anthr 350 or equivalent.

562.Formative Mesoamerica. (3)

Topics and issues concerning beginnings and development of Mesoamerican civilizations. Mexican and Mayan antecedents of classic Mayan civilization and culture.

580.Near East Seminar. (3)

Current issues in Near Eastern archaeological research.

590R.Special Topics. (3)

Special topics in archaeology, sociocultural anthropology, or museum studies.

590R.Special Topics in Museum Studies. (3)

590R.Special Topics in Archaeology. (3)

590R.Special Topics in Psychological Anthropology. (3)

590R.Ethnographic Data Analysis. (3)

590R.Ethnographic Research Design. (3)

596.Museum Projects. (3)

One or more supervised museum projects, such as producing an exhibition, developing educational materials, conducting inventory, or accessioning collections.
ANTHR 524 & ANTHR 526

599R.Academic Internship: Federal Agency on Museum/Collections Repository. (1-6)

Earning credit while employed in federal agency archaeology (BLM, U.S. Forest Service, etc.); or 320 hours in collections-holding institution (sixteen weeks half-time; eight weeks full-time).
Prior approval; completion of all course work for certificate in museum practices (may be taken concurrently with Anthr 596).

694R.Readings. (0.5-3)

Reading about 1,000 pages per credit hour and providing required products.
Supervising instructor's consent.

695R.Research. (0.5-6)

Field research, data acquisition, and data analysis. Must be thesis related.
Completion of 18 hours of 500-level core curriculum for MA program.

699R.Master's Thesis. (0.5-9)

FACULTY

Allison, James R. *Associate Professor*, PhD, Arizona State University, 2000. Archaeology; Great Basin and Southwestern U; Ceramic Analysis; Quantitative Methods

Clark, John E. *Professor*, PhD, University of Michigan, 1994. Archaeology; Mesoamerica; Political and Economic Institutions; Cultural Evolution; Ancient Technology; Theory

Crandall, David P. *Associate Professor*, DPhil, Oxford University, 1993. Social Anthropology; South Africa; Kinship; Ritual and Symbols

Finlayson, Cynthia S. *Associate Professor*, PhD, University of Iowa, 1998. Ancient, Classical, and Islamic Archaeology and Art History; Archaeology of Syria and Jordan; Archaeology and Gender; Museum Studies (M)

Forsyth, Donald W. *Professor*, PhD, University of Pennsylvania, 1979. Mesoamerica; Ceramic Analysis; Ethno-history

Hickman, Jacob *Assistant Professor*, PhD, University of Chicago, 2011. Psychological anthropology; Southeast Asia; Hmong diaspora; Messianic religion; Ethnonationalism; Morality and personhood; Migration

Johnson, David J. *Associate Professor*, PhD, University of Utah, 1987. Archaeology; Archeometry; Ancient Trade; Near East

Nuckolls, Charles W. *Professor*, PhD, University of Chicago, 1987. Cultural Anthropology; India, Japan, New Zealand, United States; Psychological Theory

Searcy, Michael T. *Assistant Professor*, PhD, University of Oklahoma, 2010. Archaeology; U, Southwest/Northwest Mexico; Long-distance interaction; Sociopolitical organization; Maya ethnoarchaeology

ART

Chair: Barton, Garold C.

Graduate Coordinator: Johnson, Mark J.

Graduate Coordinator: Lynn, Christopher Croft

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THE PROGRAMS OF STUDY

Two postgraduate degrees are offered in the Department of Visual Arts: Art Education-MA and Studio Art-MFA. Each requires practicing the component disciplines of art, as well as acquiring certain skills, knowledge, and understandings.

These strong graduate programs examine and promote the study, creation, and teaching of the visual arts, historically and from contemporary perspectives. Faculty in each area are recognized leading practitioners as well as students of the theoretical, philosophical, and professional issues of their respective academic specialties. The academic thrust of graduate studies in the Department of Arts provides a rich blend of the theoretical and the practical for a balanced understanding of art. High standards for study and practice in each degree program promote the high levels of professional practice and accomplishment expected of and achieved by our graduates.

The average number of students in each program and the duration of each program is as follows:

- Art Education: twelve students as a cohort group in program; two years to completion.
- Studio Art: fourteen students in program; two years to completion.

Art Education - MA

The MA in art education is a cohort program intended for teachers who desire intensive curriculum development, professional development, and additional content and skills in the disciplines of a comprehensive art program. This program prepares students to pursue a PhD or EdD in art education if that is their intention. The MA in art education can also contribute to K-12 licensure requirements for graduate students who are interested in teaching art. In addition to reviewing research literature in art education, this program has a rigorous studio practice component designed to integrate teaching and artistic practice.

Requirements for Degree

Credit hours (36 hours): minimum 30 course-work hours plus 6 thesis hours. Course work hours primarily from 500- and 600-level courses (no more than 9 hours of 300- or 400-level courses may apply).

- Course requirements: 15 hours of core art education seminar (VAEDU 678R); 12 hours of VAEDU 578R (3 hours of digital art; 9 hours of studio art); 3 hours of art history courses; 6 thesis hours (VAEDU 699R).
- Select graduate committee and submit study list no later than second week of second semester.
- Examinations: comprehensive examination and oral defense of thesis.

FINANCIAL ASSISTANCE

Financial assistance is available through tuition scholarships, supplemental awards, and teaching assistantships.

RESOURCES AND OPPORTUNITIES

Museum of Art. BYU's Museum of Art provides a rich and diverse environment for the presentation and research of art and the various disciplines related to its analysis, theory, history, display, and reception. Whether it is an individual work, a collection, or an entire exhibition, students are encouraged to look, reflect, analyze, challenge, and enjoy.

Faculty and students engage collaboratively with the museum in projects that yield exhibitions, texts, documentaries, and other forms of presentation. Major exhibitions from its own collection of over 15,000 works and from other important collections are brought to the museum to provoke inquiry and to contribute to the university's academic discourses. Lectures, conferences, performances, and other educational experiences occur regularly in the museum's varied and versatile spaces.

Art Studio Space. Studio space is provided for graduate students in all emphasis areas.

Art Resource Center. The center is an important library resource for graduate study of content, methods of inquiry, and methodology in the visual arts disciplines intrinsic to current art education programs. A wide variety of books, journals, art reproductions, curricula, and other visual materials and aids are available.

Art History Visual Resource Library. The library is a teaching resource providing images and reference materials primarily for the Visual Arts faculty and instructors and has been built to support the Visual Arts Department curriculum. Along with the traditional slide collection, a digital database for the approximately 10,000 digital images is currently in process and new digital images are added constantly. In addition, there are several image resources available through the Harold B. Lee Library,

including ArtSTOR and 32,000 licensed images from Saskia. There are opportunities for graduate students to work in the Visual Resources Center on assistantships to further enhance their graduate learning experience by working on database projects with professors to develop new collections for teaching and research.

COURSE DESCRIPTION

ART

610.Art Theory Context. (3)

Reviewing and critiquing major theoretical approaches in art history, emphasizing the space of display, the museum, and the work's social reception.

619R.Studio Methodologies Seminar. (1)

Seminar instruction and individual studio critiques from visiting artists.

626.Current Art Practice. (3)

Current issues in art.

640.Graduate Business Practices. (2)

Business practices and theories associated with managing a career in art.

680R.Studio Methodologies. (1-6)

Individual studio experience from selected faculty.

694R.Special Problems. (0.5-3)

Instructor's and committee consent.

695R.Theory-Based Directed Studies. (3)

Trends in the visual arts; theory-based readings, writing, and art practice. Graduate status.

699R.Master's Thesis. (0-6)

Written report that places final exhibition in a contextual setting and defines, defends, and justifies its existence. Report clarifying how exhibit verifies original proposal. Graduate student status and successful completion of preliminary exhibit.

ARTED

578R.MA Oil Painting. (3)

578R.MA Aqueous Painting. (3)

578R.Art Education Studio. (3)

MA courses in ceramics, drawing, figure drawing, oil painting, aqueous painting, printmaking, crafts, sculpture, digital art, and conceptual art media.

Graduate student status.

578R.MA Ceramics. (3)

578R.MA Drawing. (3)

578R.MA Printmaking. (3)

578R.MA Figure Drawing. (3)

578R.MA Crafts. (3)

578R.MA Sculpture. (3)

678R.Art Education Seminar: Issues and Trends. (3)

Seminar topics emphasizing issues and trends in art education. Topics investigated, discussed, and evaluated, depending on student needs.

699R.Master's Thesis. (0.5-6)

FACULTY

Adams, Paul, *Associate Professor*, MFA, Utah State University, 1996. Photography

Andersen, Bethanne, *Professor*, MFA, Brigham Young University, 1979. Illustration

Barney, Daniel T., *Assistant Professor*, PhD, University of British Columbia, 2009. Art Education, Qualitative Research Methodologies and Strategies, Pedagogy and Curriculum Studies

Barrett, Robert, *Professor*, MFA, University of Iowa, 1976. Illustration

Barton, Garold C., *Professor*, MFA, Ohio State University, 1994. Printmaking

Buehler, Fidalis, *Assistant Professor*, MFA, Brigham Young University, 2007. Studio Arts, Painting Emphasis

Christensen, Brian D., *Associate Professor*, MFA, Washington University, St. Louis, 1992. Ceramics

Draper, Bryon, *Associate Professor*, MFA, Brigham Young University, 1995. Sculpture

Everett, Peter, *Associate Professor*, MFA, Pratt Institute, 2000. Painting

Gillett, Eric, *Associate Professor*, MFA, University of Utah, 2003. Graphic Design

Graham, Mark A., *Professor*, EdD, Teachers College of Columbia University, 2001. Curriculum and Teaching

Jensen, Heather Belnap, *Associate Professor*, PhD, University of Kansas, 2007. Nineteenth- and Early Twentieth-Century European Art and Culture: Gender Studies: Critical Theory

Johnson, Mark J., *Professor*, PhD, Princeton University, 1986. History of Roman, Early Christian, Byzantine, and Medieval Art and Architecture

Magleby, Mark A., *Museum of Art Director*, PhD, Ohio State University, 2009. Eighteenth Century Art and Architecture and Garden History, Twentieth Century European Art, Contemporary Theory and Criticism,

BIOLOGY

Ostraff, Joseph E., *Professor*, MFA,
University of Washington, 1982.
Painting

Peacock, Martha, *Professor*, PhD,
Ohio State University, 1989.
History of Netherlandish Art

Reynolds, Linda, *Professor*, MFA,
University of Utah, 1993. Graphic
Design

Swensen, James, *Assistant Professor*,
PhD, University of Arizona, 2009.
American Art and Architecture,
History of Photography

BIOLOGY

Chair: Shiozawa, Dennis K.
Graduate Coordinator: Adams,
Byron J.

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THE PROGRAMS OF STUDY

The Department of Biology offers graduate training experiences in a variety of areas, including evolutionary biology, ecology, systematics, bioinformatics, conservation biology, and molecular evolution. We integrate approaches from the molecular and genetic levels, through the organismal level, to the population and ecosystem level to investigate a variety of questions in these areas. Because of our integrative nature, we have substantial expertise in plant and animal (vertebrate and invertebrate) systems. Our program provides an exceptional graduate community, including master's students, doctoral students, and postdoctoral fellows.

The Department of Biology offers three graduate degree programs: Biological Science Education-MS, Biology-MS, and Biology-PhD.

The Department of Biology has a vibrant graduate program. Students working toward a master's degree generally complete all requirements within two years. PhD students, however, routinely require about five years to complete their doctoral program.

The current Graduate Student Handbook is available to view online at biology.byu.edu.

Biological Science Education - MS

The biological science education degree is designed to prepare students with advanced skills and knowledge for teaching in high schools and colleges. Students opting for this degree pursue

original research and present results in formal thesis format. Since all research for this degree is expected to be of publication quality, theses are usually prepared in a form suitable for immediate submission for review by an appropriate scholarly journal. This degree is not an alternative teacher certification program.

Requirements for MS Degree
Programs in Biological Science
Education:

- Credit hours (30): minimum 24 course work hours plus 6 thesis hours; 20 hours must be in the 500-level series and above (can include 691R, 699R, etc.).
- Required courses: Bio 691R (Graduate Seminar two semesters); Bio 503 (Graduate Orientation) or equivalent. Additional courses as determined by student's advisory committee and approved by department graduate coordinator.
- Annual progress reviews by advisory committee and graduate committee.
- Presentation of research prospectus to advisory committee.
- Thesis: standard university thesis or journal publication format.
- Examinations: (A) coursework oral examination, (B) oral defense of research, and (C) oral defense of thesis.

FINANCIAL ASSISTANCE

Teaching and research assistantships are offered on a competitive basis by the department. PhD students are guaranteed a Teaching Assistant position for each semester enrolled while MS students are guaranteed TA employment for the Fall and Winter semesters.

Tuition assistance is also available for both the MS and PhD degrees. Master's students receive a \$1000 tuition award for Fall and Winter semesters, and PhD students are granted a full tuition waiver for all semesters enrolled.

RESOURCES AND OPPORTUNITIES

DNA Sequencing Facility. The DNA Sequencing Center was established to help researchers process DNA samples efficiently and economically. The center is equipped with an ABI 3730 96-capillary automated sequencer, an ABI 3100 16-capillary machine, and a 454 Pyrosequencer that run DNA sequences and microsatellite runs. Operated by a faculty director, a full-time manager, a part-time manager, and a number of undergraduate student assistants, the center is open for use by undergraduates, graduate students, faculty, and, through special arrangements, researchers from outside the university. The centralization of equipment and expertise has dramatically reduced the expense of DNA research while increasing the efficiency and quality of the data generated.

M. L. Bean Life Science Museum. Extensive biological collections are housed in the M. L. Bean Life Science Museum and are available for supervised student research. Curators and their students often conduct fieldwork throughout the U.S. and in many other parts of the world.

Electron Optics Laboratory. In this lab, researchers can accomplish all standard electron optics procedures. The laboratory has transmission and scanning electron microscopes equipped with X-ray microanalysis capabilities, plus accessory equipment for freeze-fracture, freeze-drying, and necessary support facilities, including confocal laser scan microscopy.

USDA Forest Service Shrub Science Laboratory. Housed on the BYU campus, this lab supports one of the finest research programs on native shrubs in the world. Here eleven PhD research scientists with adjunct faculty appointments work with BYU faculty members and graduate students. Laboratories, greenhouses, and gardens on campus and around the state support studies on desert shrubs.

Lytle Ranch Preserve. Graduate students are able to do year-round research on desert plants and animals at the Lytle Ranch. This large preserve is located in the moderate desert climate of southwestern Utah. For access to the preserve, contact the M.L. Bean Life Science Museum at (801) 422-5052 or at secretary.museum@byu.edu.

Opportunities. On the Provo campus are greenhouses, gardens, an arboretum, a small animal vivarium, and a tissue culture room. Laboratory facilities include gas chromatography-mass spectrometers, isotope ratio mass spectrometers, transmission and scanning electron microscopes, ultra centrifuges, visible ultraviolet and infrared spectrophotometers, gas chromatographs, high-performance liquid chromatographs, infrared gas analyzers, atomic absorption spectroscopy, flow cytometry, microarray scanners, plate readers, and many other items.

Faculty and graduate students are engaged in a number of significant and interesting research projects, funded both externally and internally. Some of these include the following: evolutionary and biochemical ecology; plant and animal systematics; bioinformatics; evolutionary and conservation biology; molecular evolution; phylogeography; population, community, and ecosystem ecology; biogeochemistry; evolution of development; marine and freshwater biology; biological science education; environmental science; and conservation of rare species.

COURSE DESCRIPTION

BIO

503. Research Orientation. (1)

Introduction to graduate school and research techniques.

510. Biological Systematics and Curation. (3)

Principles, methods, and tools of taxonomy and systematics as applied to species delimitation, specimen-based research, nomenclatural codes, and the curation of biological specimens.

511. Lichenology. (3)

Classification, morphology, and ecology on lichens. Field trip required.

512. Angiosperm Phylogeny. (3)

Description, classification, phylogeny, and geographic distribution of flowering plant families.

Bio 430 or equivalent.

525. Animal Disease, Biosecurity, and Zoonoses. (3)

Animal disease emphasizing prevention, organ systems affected, biosecurity, and zoonotic potential. Bio 380 or instructor's consent.

541. Aquatic Entomology. (4)

Morphology, classification, biology, and functional ecology of aquatic insects. Field trips required. Bio 441 or equivalent.

555. Evolutionary and Ecological Modeling. (2)

Using models in ecology. Practical experience in analytical, simulation, and agent-based models. Senior status in bioinformatics program or graduate status; Stat 511, 512, or equivalent; instructor's consent.

556. Limnology. (3)

Lakes, reservoirs; their biota and physical/chemical properties. Bio 350, Chem 106; or equivalents.

BIOLOGY

557.Stream and Wetland Ecology. (4)
Stream and wetland ecology; their biota and their physical/chemical properties.
Bio 350, Chem 106; or equivalent.

559R.Tropical Biology. (1-6)
Instructor's consent.

559R.Advanced Topics in Ecology and Evolution. (1-6)
Current topics in ecology, evolution, and systematics.
Instructor's consent.

559R.Advanced Ecology. (1-6)
Instructor's consent.

559R.Physiological Ecology. (1-6)
Instructor's consent.

559R.Field Biology. (1-6)
Instructor's consent.

560.Population Genetics. (4)
Basic principles of population genetics applied to natural populations; drift, selection, and nonrandom mating; inferring population subdivision, migration, and gene flow.
Bio 420 or equivalent.

581.Biological Applications in Electron Microscopy. (3)
Theoretical and practical aspects of transmission and scanning electron microscopy of biological samples.

640.Phylogenetic Systematics. (4)
Theoretical foundations of modern systematics, methods of phylogenetic inference, and discussion of contemporary literature.
Bio 420 or equivalent.

641.(Bio - MMBio) Molecular Evolution. (4)
Theoretical foundations of molecular evolution; molecular phylogenetics, estimates of population genetic parameters, gene duplication, horizontal gene transfer, rates of evolution, molecular clocks.
Bio 420 or equivalent.

652.Evolutionary Ecology. (3)
Exploring the diversity of life by integrating ecological and evolutionary perspectives. Topics include theoretical population ecology, advanced evolutionary biology, and behavioral ecology.
Bio 350, 420; or equivalents.

653.Community and Ecosystem Ecology. (3)
Integrating ecological and biogeochemical concepts to understand the structuring of biological communities and ecological systems. Topics include community assembly, trophic dynamics, systems biology, ecosystem services, and biodiversity-ecosystem function.
Bio 350, 420; or equivalents.

679R.Advanced Topics in Science Education. (3)
Current topics in biological science education.

681R.Electron Microscopy Laboratory. (1-6)
Advanced research in electron microscopy.
Instructor's consent.

691R.Graduate Seminar. (0.5)

694R.Special Problems in Biology. (1-6)
Independent student research under faculty supervision.
Supervisor's consent.

695R.Practicum in Biology Teaching. (4-8)
Curricula, principles, concepts, and experiences in teaching biology effectively.

699R.Master's Thesis. (1-9)

799R.Doctoral Dissertation. (1-9)

FACULTY

Adams, Byron J., *Associate Professor*, PhD, University of Nebraska, 1998. Molecular Systematics, Evolutionary Ecology, Ecological Genomics

Belk, Mark C., *Professor*, PhD, University of Georgia, 1992. Evolutionary Ecology

Bybee, Seth M., *Assistant Professor*, PhD, University of Florida, 2008. Insect Phylogenetics and Evolution of Insect Visual Systems

Clark, Shawn M., *Professor*, PhD, Ohio State University, 1987. Museum Curation, Insect Systematics

Gill, Richard A., *Associate Professor*, PhD, Colorado State University, 1998. Ecosystem and Physiological Ecology

Jensen, Jamie L., *Assistant Professor*, PhD, Arizona State University, 2008. Biological Science Education

Johnson, Jerald B., *Professor*, PhD, University of Vermont, 2000. Evolutionary Ecology

Johnson, Leigh A., *Professor*, PhD, Washington State University, 1996. Plant Systematics and Evolution

Johnson, Robert L., *Associate Research Professor*, PhD, Brigham Young University, 2008.

Kauwe, John S. K., *Assistant Professor*, PhD, Washington University in St. Louis, 2007. Genetic Architecture of Complex Human Diseases

Koide, Roger T., *Professor*, PhD, University of California, Berkeley, 1984. Physiological and Community Ecology of Plants and Fungi

Nelson, C. Riley, *Professor*, PhD, Brigham Young University, 1986. Entomology, Ecology, Systematic Biology

Peck, Steven L., *Associate Professor*, PhD, North Carolina State University, 1997. Environmental Biostatistics, Biomathematics, Entomology

Piccolo, Stephen R., *Assistant Professor*, PhD, University of Utah, 2011. Bioinformatics, Genomics

Rader, Russell B., *Professor*, PhD, Colorado State University, 1987. Freshwater Evolutionary Ecology

Ridge, Perry G., *Assistant Professor*, PhD, Brigham Young University, 2013. Bioinformatics, Computational Biology

Roeder, Beverly L., *Professor*, PhD, Pennsylvania State University, 1990. Anatomy; Physiology, Medicine and Surgery, Animal Health, Prevention and Diagnoses of Metabolic Disorders

Rogers, Duke S., *Professor*, PhD, University of California, Berkeley, 1986. Phylogenetic Systematics, Mammalogy, Rodent Disease Ecology

Shiozawa, Dennis K., *Professor*, PhD, University of Minnesota, St. Paul, 1978. Aquatic Ecology, Ichthyology

Sites Jr., Jack W., *Professor*, PhD, Texas A&M University, 1980. Evolutionary Genetics, Herpetology

St. Clair, Larry L., *Professor*, PhD, University of Colorado, 1984. Cryptogams, Environmental Biomonitoring

Whipple, Clint J., *Associate Professor*, PhD, University of California, San Diego, 2006. Evolution of Plant Development

Whiting, Michael F., *Professor*, PhD, Cornell University, 1994. Entomology, Phylogenetic Theory and Practice

Wilcox, Edward R., *Research Associate Professor*, PhD, University of California, Davis, 1982. Human Genetics

BUSINESS ADMINISTRATION

Program Director: McQueen, Grant R.

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<http://mba.byu.edu>

THE PROGRAMS OF STUDY

The master of business administration program (MBA) is overseen by the Marriott School of Management. A two-year program designed to prepare the graduate student for a career in business, the program offers a world-class academic experience that enables students to integrate the most advanced theories, models, and concepts into real-life learning situations. Courses are integrated across disciplines to leverage faculty and improve understanding of individual business functions and the firm as a total enterprise. Case studies, international immersions, simulations, case competitions, collaborative team projects, and immersive field-based learning make the BYU MBA educational experience practical, rigorous, leadership-focused.

The MBA program attracts, admits, and graduates students who are committed to BYU's unique mission. Purposes of the program include:

- To help each student better understand the balanced development of the total person and the complete leader and that faith in the teachings of the restored gospel of Jesus Christ are relevant to professional life.
- To develop in students those professional skills that will assist them in becoming influential leaders in their homes, their churches, their communities, and their professions.
- To expand students' visions of their possibilities for future professional and other endeavors.

The curriculum has been designed to achieve the twofold task of giving the student (1) a general business education and (2) depth in area(s) bearing specifically on personal professional interests.

Students choose from five designed majors: finance, marketing, global supply chain management, organizational behavior/human resource management (OB/HR), and entrepreneurship. Students can also design their own track to fit their career goals.

For the most recent and complete information visit our website: <http://mba.byu.edu>.

A brief description of each track follows:

Finance

The finance track prepares students to work in corporate finance or with financial institutions. The corporate finance curriculum trains students for careers as financial analysts, controllers, and treasurers within large corporations. The financial institutions curriculum trains students for careers in investment banking, commercial banking, and securities management. The corporate finance curriculum is appropriate for students who seek general management positions with a strong financial background, whereas the financial institutions curriculum is more specialized and focused on positions in finance firms.

Marketing

The marketing major builds on proven industry experience and academic achievements in the areas of marketing information systems, international brand management, and market analysis. This track prepares students for employment in product/brand management, e-commerce/database marketing, and high-technology marketing.

Global Supply Chain Management

The supply chain is the complete sequence of companies and value-enhancing activities required to transform basic raw materials into useful products and services for customers. Successful companies effectively manage operations within the walls of their own organization. Global supply chain management is one of the fastest growing job markets for business graduates.

Organizational Behavior/Human Resource Management (OB/HR)

The OB/HR major provides the fundamentals to make organizations better through the strategic management of their most important asset—talented people. The OB/HR curriculum equips students with leading-edge theories and the best practices, analytical and diagnostic skills and tools to become more effective change agents in organizations. Career opportunities exist in corporate human resources roles, both in HR generalist roles (e.g., HR business partner) and in HR specialist roles (e.g., leadership development, executive compensation), as well as in organizational consulting.

Entrepreneurship

Students interested in pursuing an entrepreneurship major should be highly focused on creating new ventures or launching new products or divisions within larger organizations (intrapreneurship). The entrepreneurship major works closely with the Rollins Center of Entrepreneurship and Technology to provide our students internships, externships, seed funding, and a network of successful entrepreneurs (such as the Founders Organization) and venture seed groups to provide the necessary resources and relationships to successfully launch new ventures.

Business Administration - Executive Program - MBA

Business Administration - Executive Option

The executive masters of business administration option is a rigorous program in general management for fully employed professionals. Designed for managers and professionals who typically have at least five years of full-time managerial work experience, it consists of courses similar to the full-time MBA program but is unique in reflecting the work and management experience of its students. The Executive MBA is a general degree and does not offer specialization in functional areas.

All Executive MBA classes are offered at the BYU Salt Lake Center in downtown Salt Lake City in a weekend format. Classes are held every other weekend on Friday from noon to 6:30 p.m. and on Saturday from 8 a.m. to 3 p.m.

Obtaining an MBA degree through the executive MBA option requires a year-round commitment for two years.

Students spend one residency week on campus at the beginning of each school year in a complex case analysis and other concentrated study. Executive MBA classes are not available to students outside the Executive MBA program.

FINANCIAL ASSISTANCE

The MBA program utilizes the Marriott School's financial aid provisions. Qualified students can receive aid from the Marriott School of Management Scholarship Fund, private scholarship donations, and loan assistance.

Scholarships

The Marriott School currently has over ninety private scholarships. On-line applications for these scholarships are made available to second-year, full-time MBA students in January (deadline March 31).

In addition to these private scholarships, the full-time MBA program awards scholarship funds to first-year students based on academic merit, work experience, and diverse life experiences.

Assistantships

Second year students can apply for research and teaching assistantships at the end of their first year.

Loans

Several loans are available for Marriott School students:

- Marriott School loans: available to full-time Marriott School day students. Marriott School loans are handled on an individual basis, dependent on financial need and standing within the participating program.
- BYU short-term loans: available for up to the cost of tuition only.
- Federal Stafford loans: subsidized by the U.S. government. Not available for international students.

We invite you to visit the financial aid website at <http://financialaid.byu.edu> for detailed information as well as to access financial aid applications.

RESOURCES AND OPPORTUNITIES

Business administration students utilize the N. Eldon Tanner Building, which houses the Marriott School of Management. This unique glass and granite building is a wonderfully versatile and inspiring place for students studying business and public management.

The N. Eldon Tanner Building includes a 76,000 square foot expansion dedicated in October 2008. The new four-story building expansion is attached to the west side of the current building.

This expansion includes: tiered case rooms, flat classrooms, team study areas, open study areas, lockers, MBA and MPA student lounges, MBA program offices, faculty offices, conference rooms, and a New York-style deli. Part of this expansion also includes a three-level, open-air parking structure.

The Marriott School is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication and fill leadership positions in a number of national professional organizations. The school has developed innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice. This is accomplished, in part, through the Marriott School's National Advisory Council and the Executives on Campus Program.

Consisting of sixty-five to seventy prominent business and government executives, the National Advisory Council lends major support to the Marriott School. Students benefit by interacting with council members in special campus lectures and seminars and visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.

The Executives on Campus Program gives students an opportunity to interact with distinguished business and government leaders who come to campus. These executives visit classes and meet with student organizations as well as participate in the Executive Lecture Series and the Entrepreneurship Lecture Series.

COURSE DESCRIPTION

MBA

501. Corporate Financial Reporting. (1.5)

Analyzing financial accounting and reporting issues used by prospective managers.

502. Managerial Accounting 1. (1.5)

Objectives and procedures of cost accounting. Topics include job costing, joint product costing, cost behavior analysis, standard costs, cost allocation problems, and cost data use in management.

505. Leadership. (3)

Develop leadership ability by identifying and building upon existing strengths. Students focus on maintaining positive professional relationships while motivating high performance of individuals, teams, and organizations. Topics include organizational culture and change, leader communication, and character.

510. Management and Information Technology. (1.5)

Management and control with information technology. Information flow, database design, and use applied to cost controls and managerial decision making.

520. Business Finance. (3)

Short-term financing of a business operation. Developing techniques for financial planning, such as analysis of ratios, profitability, and liquidity.

521. Global Treasury Management. (3)

Prepare students to work as treasurer or CFO by helping them understand banking relations, cash management, short-term investing and borrowing, liquidity management, and receivables and payables management in an era of electronic commerce.
M B A 520; Fin 201.

524. Advanced Corporate Financial Reporting. (1.5)

Areas of financial reporting where managers have considerable discretion, including pensions, leases, equity securities, earnings, dilution, employee stock options, and deferred taxes. Dynamics between auditors, managers, and financial analysts.

527. Financial Statement Analysis. (1.5)

Analysis of financial statements and accompanying footnotes. How various accounting methods might affect interpretation and use of financial information.

528. Managerial Finance. (3)

Elaboration on MBA 520 topics (i.e., capital budgetary, cost of capital, and capital structure). Concepts such as real options, valuation, and mergers introduced.

529. Strategic Logistics Management. (3)

Applying and integrating logistics-related topics, including materials management, physical distribution, inventory management, warehousing, logistics network design, customer service, packaging, and materials handling.

530. Operations Management. (3)

Examining issues and tools in production and operations management. Specific tools for forecasting, planning, inventory control, and project management presented and developed.

532. Strategic Sourcing. (3)

Upstream supply chain activities of supplier selection, management, and development. Topics will include negotiations, costing, product development, and commodity analysis.

537. Change Management. (3)

Theory and practice of change in organizations.

542. Micro/Macro Organizational Behavior. (3)

Foundation for understanding organizations -- behavior, structure, purposes, including models and diagnostic frameworks. How overall environment and societal context shape individuals and organizations.

544. Team Management and Consultation. (3)

Investigating the dynamics that make teams successful, analyzing pitfalls of working in teams, and exploring recommendations to improve team effectiveness. Identifying and resolving common team challenges, as team members and consultants to an external team.

546. Human Resource Management Skills. (3)

Acquiring skills and competencies including selection, compensation, performance evaluation, training evaluation, organizational assessment, and research methodology.

547. Labor Relations and Employment Law. (3)

U.S./International labor/ industrial relations. History, labor law, union organizing campaigns, contract negotiations, arbitration, union avoidance. Employment discrimination, work policies, and workplace safety and health.

548. Strategic Human Resource Management. (3)

HRM from manager's perspective. Employment relationship, recruiting/selection, employment law, performance management, and HRM in emerging companies. Managing human assets within firm's strategy, industry, and stakeholder environment.

549R. Professional Seminar in Organizational Behavior. (0.5-3)

Special topics or problems varying from semester to semester, e.g., conflict resolution, power and influence, intergroup relations, career development and planning, and management skills.

549R. Work and Family. (0.5-3)

Research and practical application related to successfully harmonizing one's family and work lives.

549R. Understanding Organizations. (0.5-3)

Perspectives of psychology and sociology on the organization, organizational identity, organizational effectiveness, and organizational change. Critical thinking and application to cases and personal experience.

550. Marketing Management. (3)

Development of analytical marketing tools and techniques; their utilization in case analysis and decision making in marketing management.

553. Pricing Strategies. (3)

Introduction to frameworks relevant for making pricing decisions. An integrative approach to pricing strategies combining strategic, economic, marketing, and psychological considerations.

554. Internet Marketing. (3)

Marketing strategy for business on the internet: marketing research, sales, and promotional concepts.

556. Advertising and Promotion. (3)

Key issues facing marketing managers when promoting products and services. Cases, readings, and research on the elements of effective communication strategies and promotional programs.

580. Business Strategy. (3)

Introduction to strategic planning; concepts, models, and analysis.

584. Introduction to Global Management. (1.5)

Foundations in global management integrating strategy, finance, operations, marketing, and human resource management.

590R. Consulting Field Study. (0.5-3)

Working as a team with faculty and management in strategic consulting projects for local, national, and international business.

590R. Business Plan competition Management. (0.5-3)

Directors of the BYU Business Plan Competition learn and apply skills in leadership, governance, financial management, mentoring, and VA/Angel networking. application and faculty approval required.

590R. Miller New Venture Competition Leadership. (0.5-3)

Working as a team with faculty and management in strategic consulting projects for local, national, and international business.

591R. Integrative Exercise. (0.5-3)

Integrated applications of case analysis and presentation skills. Group work to analyze cases and formulate recommendations, followed by professional presentations to groups representing management.

593R. Management Seminar. (0.5-3)

Invited guests speak on topics of general management interest ranging from ethics, industry problems and opportunities, and government policies to relevant current events.

598R. Curricular Practical Training. (0.5)

Hands-on practical training for MBA international students to be taken after their first year of the MBA program.

602. Taxation for Decision Makers. (3)

Analysis of business and individual transactions for their tax factors. Basic structure of the law and implications for both personal and corporate income tax.

604. Business Ethics. (1.5)

Basic issues, concepts, and tools of management ethics; includes ethical theory, character ethics, and social responsibility, all taught in a gospel context.

605.Decision Analysis. (1.5)

Applying analytical decision-making tools to management situations using spreadsheet decision models based on concepts of risk, uncertainty, and multiple criteria.

606.Optimization. (1.5)

Applying analytical decision-making tools to management situations, emphasizing spreadsheet decision models that optimize a key variable subject to constraints.

609.Money, Financial Markets, and Forecasting. (3)

Applying macroeconomics and statistics to understand key institutions, anticipate business conditions, predict interest rates, and forecast market indicators.

614.Spreadsheet Automation and Modeling. (3)

Programming in Excel VBA; automating common tasks; retrieving data from web servers; building optimization models and user forms. Admission to a Marriott School graduate program.

615.Spreadsheets for Business Analysis. (3)

Use of spreadsheets to support business analysis and decision making. Includes sensitivity analysis, pivot tables, introductions to databases and macros, charting, and similar topics.

617.Risk Management. (3)

Management of risk exposures in a business setting. Identifying, measuring, and dealing with both traditional insurable risks and financial risks.

618.Financial Markets. (3)

Learning how financial markets work. Understanding terminology of markets. Gaining exposure to market professionals and institutions. Developing skills in company analysis, portfolio management, and Excel spreadsheets. Preparing for careers in financial markets.

619.Customer Relationship Management. (3)

Methods and principles for effective management of customer relationships and interactions. Analyzing customer-interactive processes. Facilitating customer roles in the supply chain pertaining to cost, quality, and workflow. Using customer service technology for strategic advantage.

620.Personal Financial Planning. (3)

Financial decision making for households: income tax, retirement and estate planning, investment strategy, portfolio management, and personal risk management. Business interests affecting personal finances.

621.Advanced Corporate Finance. (3)

Issues such as mergers/acquisitions, valuation, financial restructurings, leveraged buyouts, capital structure, international portfolio analysis, tax-driven decisions, leasing, recapitalizations, and industry restructurings.

622.Investments. (3)

Basic principles and techniques of investment analysis and portfolio selection and management. Portfolio policies available to investors.

623.Corporate Governance. (3)

How corporate boards are led, focusing especially on the role of the director, the rights of shareholders, the compensation of executives, and the challenge boards face in balancing the needs of shareholders, managers, and other stakeholders.

624.Capital and Security Markets. (3)

Functions and instruments of capital markets: relationships to money markets, historical background, structures, and analysis of significant economic problems and trends in the markets.

625.Talent Management. (3)

Learn principles, practical methods, and best company practices to attract, develop, and retain an organization's most important resource--its talented people.

626.Derivatives and Fixed Income. (3)

Valuing and using derivative and fixed-income securities. Key concepts include equilibrium pricing, arbitrary pricing, and financial engineering.

627.International Finance. (3)

Impact that currency, tax and capital market variations between countries have on sourcing of funds, management of working capital, investment of funds, and protection of assets. Understanding the foreign exchange market.

629A.Silver Fund, Part 1. (3)

Team management of actual investment portfolios. Responsibility for economic forecasts, security selection, and portfolio strategy. Students should register for both fall and winter semesters. Finance faculty consent.

629B.Silver Fund, Part 2. (3)

Team management of actual investment portfolios. Responsibility for economic forecasts, security selection, and portfolio strategy. Students should register for both fall and winter semesters. M B A 629A; Finance faculty consent.

631.Power, Influence, and Negotiation. (3)

Analysis of power and influence processes; develop observational skill; roles of networks, social capital, and influence in organizations; employing power and influence to negotiate effectively.

633.Global Supply Chain Strategy. (3)

How companies win fiercely competitive battles for customer loyalty by bringing together the complementary competencies residing up and down the supply chain to create unique value in a rapidly changing global environment.

634.Quality Management. (3)

Concepts of quality management; strategic issues, philosophies, and tools used to implement and control quality.

635. Financial Modeling A: Valuation (1.5)

Use spreadsheets to value businesses and structure deals; master Excel, retrieve and interpret financial data; build discounted cash flow, market comparable, and precedent transaction valuation models.

MBA 501 & MBA 520, or Acc 440 & Fin 410.

636. Financial Modeling B: Transactions. (1.5)

Use spreadsheets to structure financial deals including mergers and acquisitions, leverage buyouts, private equity, and venture capital deals.

M B A 635

637. Global Supply Chain Management. (3)

The emerging rules of a global marketplace and their influence on key supply chain activities and processes. Preparing students for supply chain leadership and for engaging in a Cougar global supply chain consulting experience.

638. Strategic Issues in Operations. (3)

Interface of strategy and manufacturing. Topics include: capacity and facilities management, work force management, quality management, technology management, vertical integration, manufacturing infrastructure, manufacturing interface with other functions, and incorporating manufacturing in corporate strategy.

639. Product Development: Market to Concept. (3)

Strategies, processes, tools, and methods in product development, focusing on initial stages of market and competitive assessment to concept development. Graduate standing as a student in business administration, mechanical engineering, or manufacturing, or instructor's consent.

640. Leadership 2: Strategies for Leading and Managing Organizations. (1.5)

Understanding and building individual leadership skills required for a global business environment.

645. International Human Resources. (3)

Understanding national, organizational, and ethnic cultures and cultural frameworks used for business. Cross-country analysis; international human resource issues and working abroad.

650. Research Methods in Marketing. (3)

Integrating problem formation, research design, questionnaire construction, sampling, data collection, and data analysis to yield decision-making information. Examining the proper use of statistical applications and qualitative methods emphasizing results interpretation.

651. Marketing Field Study. (3)

Completing and analyzing a marketing project in cooperation with corporate clients. Responsibilities include problem definition, project management, report development, and presentations.

653. Introduction to Marketing Analytics. (3)

Types of data and analytical techniques currently used in marketing. Students will be required to analyze a variety of datasets using software tools including Tableau, R, and Sawtooth Software.

654. Strategic Account Management. (3)

Improvement of persuasion, selling, and interpersonal leadership skills to influence the behavior of people toward common goals. Managing salespeople and buyers to build a long-term portfolio of loyal, strategic customers.

655. Consumer Behavior. (3)

Improving managerial decisions by gaining an in-depth understanding of consumers. Topics include transproduct consumer needs, perception, information processing, persuasion, decision-making, and post-consumption evaluation.

656A. Advanced Marketing Analytics A. (3)

An immersive experience in marketing data and analytics. Students work on analytics projects for a variety of companies focusing on developing data products. M B A 653

656B. Advanced Marketing Analytics B. (3)

An immersive experience in marketing data and analytics. Students work on analytics projects for a variety of companies focusing on developing data products. MBA 656A

657. Brand Management Strategy. (3)

Develop the fundamental skills required to successfully manage consumer brands, including brand strategy and development, P&L management, portfolio creation, AC Nielsen analysis, product innovation and competitive strategy.

658. International Marketing. (3)

Institutions and techniques related to marketing goods and services in other countries: international dimensions of product, price, distribution channels, and promotion as they are adjusted to meet social, cultural, and political environments found in other countries.

659. Business-to-Business Marketing. (3)

Examining the scope and challenges of business-to-business markets, including building and managing customer relationships and services, customer selection, B2B distribution channels, managing R&D and technical product development, new-product launch, positioning, and pricing.

660.Advanced Brand Strategy. (3)

Strategic market analysis and development and implementation of a strategic marketing plan for a new product, new business, or an ongoing operation.

661.Global Business Negotiations. (3)

Concepts/practices of effective negotiation in the global marketplace. Experiential learning techniques: case studies, role plays, simulations, and videos to develop skills. Cross-cultural international factors that affect negotiation.

664.Venture Capital/Private Equity Fundamentals. (3)

Academic and applied experience opportunities focusing on venture capital and private equity industries, capital acquisition, due diligence, management, governance issues, and best-practice decision making.

665A.Advanced Venture Capital/Private Equity Strategies, Part 1. (3)

Applied experience in venture capital and private equity, conducting due diligence on clients, industry, competition; observing and participating in deal structure; tracking progress of funded client companies.

665B.Advanced Venture Capital/Private Equity Strategies, Part 2. (3)

Applied experience in venture capital and private equity, conducting due diligence on clients, industry, competition; observing and participating in deal structure; tracking progress of funded client companies.

669.Entrepreneurial Strategy. (3)

Developing and applying strategies in emerging businesses, focusing on strategic business models, capital acquisition, and competitive differentiation in new businesses, especially e-businesses. Students consult directly with businesses.

670.Innovation and Entrepreneurship. (3)

Creating and capturing value through individual and organizational innovation; strategies to increase the flow of innovation and the probability of success.

671.Creating New Ventures. (3)

Learning the critical skills to create a successful new venture by validating an initial idea and business model in the field. M B A core.

672.Entrepreneurial Marketing. (3)

Strategies for start-up companies. Topics include marketing to investors, internal marketing, and marketing products/services without a marketing budget.

674.Managing New Ventures. (3)

Drawing heavily upon the post-undergraduate professional experience, students will operate and grow high-tech or growth businesses after creating a new venture and securing funding. M B A core.

676.New Venture Launchpad. (3)

Launching actual new ventures. Mentored learning of idea validation, business models, minimum viable products, and financing plans. Good preparation for participating in BYU's entrepreneurial competitions.

677R.Entrepreneurship Through Acquisition: Search Funds and Technology Licensing. (3)

Evaluating industries, companies, and term sheets for acquisition targets involving search funds and technology licensing. Proven approach to lower-risk pursuit of entrepreneurship opportunities. First semester MBA curriculum.

680.Competitive Strategy. (1.5)

Advanced course in competitive strategy for dynamic markets. Exploring topics such as growth, competitor analysis, positioning, and real options. Employing frameworks such as rugged landscapes, Schumpeterian competition, and evolutionary economics to develop strategic options. M B A 580

681.Strategy Implementation. (1.5)

Creating alignment among organizational elements of the firm; managing strategic change; and the role of personal and business values in strategy.

683.Creative Strategic Thinking. (3)

Understanding conditions under which creative ideas/strategies emerge; building skills for creative strategic thinking; generating valuable ideas for companies.

684A.Advanced Strategy and Consulting A. (3)

Strategy consulting, working with client companies to scope engagements, perform work, deliver analysis and recommendations, and assist in initial implementation. MBA 580 & MBA 669

684B.Advanced Strategy and Consulting B. (3)

Strategy consulting, working with client companies to scope engagements, perform work, deliver analysis and recommendations, and assist in initial implementation. MBA 684A

685.Strategic Decision Making. (1.5)

Economic, philosophic (logical), psychological, political, and history-based models of decision making and judgment; improving students' decision making processes.

686.Real Estate Analysis: Finance and Investment. (3)

Applying principles and techniques of property investments, including determining value, financing arrangements, and marketing and management problems.

CHEMICAL ENGINEERING

687.Strategic Simulation. (1.5)

Participating as teams in an on-line strategy experience and practicing skills in strategy formulation, group decision making, and strategy execution.

688.Corporate Social Innovation. (1.5)

Examining and applying models of social innovation unique to corporations: direct investment, partnerships with governments and/or NGOs, direct- or foundation-based philanthropy, and industry-or sector-level interventions, in both domestic and international contexts.

690R.Management Field Study. (1-3)

Experiment working with faculty and management in assisting businesses with specific projects.

691.Real Estate Development. (3)

Applying financial and real estate principles to practical property investments. Insights into the real estate profession, emphasizing development.

692.Social Innovation and Social Entrepreneurship. (1.5)

Issues facing social innovators, those that work full-time for them, and those who support them; understanding complex systems of for-profit, nonprofit, and hybrid social ventures; outlining involvement in social innovation as part of a lifetime of meaningful service.

693R.Database Marketing. (3)

Key issues in managing and developing on-line marketing databases for segmenting markets and developing marketing tactics. In-depth development of data mining techniques and advanced statistical analysis.

693R.Readings and Conference. (0.5-3)

Subject to be arranged with instructor.

FACULTY

The Business Administration program draws graduate faculty from each of the five departments within Business Administration

CHEMICAL ENGINEERING

Chair: Lewis, Randy S.
Graduate Coordinator: Pitt, William G.

350 CB, Provo, UT 84602-4100
(801) 422-2586

<http://chemicalengineering.byu.edu>

THE PROGRAMS OF STUDY

The Department of Chemical Engineering at BYU has been offering graduate degrees since 1960 and has become a center of cutting-edge research and teaching. External funding for departmental research is over \$2 million per year, with 14 faculty members and approximately 40 graduate students working to solve technical, scientific, and engineering problems to meet global and societal needs. Faculty and students share their innovations and research in leading scientific publications, attend international research conferences, and collaborate with other researchers across the world. As discussed below, the department is home to a number of specialized research centers where multiple faculty members and students collaborate on long-term projects with lasting impact. The department is known for strong research programs in sustainable energy, catalysis, thermodynamics, molecular modeling, process control, electrochemical engineering, and bioengineering.

The Department of Chemical Engineering offers two degrees: Chemical Engineering-MS and Chemical Engineering-PhD. The department also offers an integrated master's program. The typical length of study for students who begin with a BS degree in chemical engineering is two years for the MS degree and four and a half years for the PhD degree.

Chemical Engineering - MS

An MS in chemical engineering prepares the student for a wide variety of employment experiences in industry ranging from plant operation to plant design. Employment opportunities in research may also be available to qualified MS graduates. Typically starting salaries are slightly higher than those for BS graduates. The MS degree is designed to give the student a solid foundation in chemical engineering principles and a strong research experience. For students desiring design experience rather than research experience, the MS degree with design emphasis is available. See the Chemical Engineering Graduate Student Handbook for details: chemicalengineering.byu.edu/Grad_Handbook_2012.pdf.

Requirements for Degree

Credit hours: minimum 30 hours including 6 thesis hours (Ch En 699R). No more than 9 hours of 300-499 level course work will apply toward the master's degree. All courses taken to satisfy degree requirements must be approved by the student's advisory committee.

- Required courses: Ch En 531, 533, 535, 601, 691R (every semester) and electives (12 or more hours). For requirements of special programs, see the Chemical Engineering Graduate Student Handbook (see web address above).
- Non-Ch En background: students without a previous chemical engineering degree are required to complete the following undergraduate courses in addition to the above requirements: Ch En 273, 373, 374, 376, 386; Math 302, 303; Chem 351. In addition, students without adequate exposure to the topics in Ch En 451, 476, and 477 are required to complete 2 hours of Ch En 493R during Spring Term to address these topics. Specific classes in this list may be waived by

the department based on the student's prior coursework. This requirement is based on two principles: (1) each student should have a sufficient foundational preparation in the chemical engineering discipline prior to taking the graduate core classes (Ch En 531, 533, and 535), and (2) each graduating student should be competent in a basic set of undergraduate chemical engineering skills as part of their preparation for professional practice.

- English proficiency: international students whose English language skills are judged by the department to be inadequate for completion of the degree may be required to take one or two ESL courses as specified in the admission letter.
- Residency requirement: residency is required for the major part of the work toward the master of science thesis. This work must be completed under the specific direction of a graduate faculty member while the student is in residence at BYU (at least two consecutive full-time semesters). "In residence" is defined as (1) being registered for credit as a graduate student and (2) living and conducting research in the general vicinity of the university, where the student has ready access to research facilities and consultation with the faculty. Further, all work applying toward any master's project or thesis must be completely open for university review and publication. Any exceptions to the above must be supported by written approval from the department and college and obtained in advance of any work being performed.
- Prospectus: each student must submit and obtain approval for a written prospectus on his or her proposed thesis topic.
- Periodic reviews: The department evaluates each student's progress twice a year. Continuance as a candidate requires satisfactory ratings in these reviews.

- Examinations: a comprehensive qualifying examination on graduate engineering skills must be taken and passed as described in the Chemical Engineering Graduate Student Handbook. The examination is offered once a year.
- Thesis: a written thesis on a significant engineering problem must be completed and defended orally to the satisfaction of the department.
- Cumulative GPA: 3.0 or above in all MS degree classes.

FINANCIAL ASSISTANCE

For all graduate degree programs, support is available from the department and the university in the form of teaching assistantships and competitive fellowships, and from faculty members in the form of research assistantships. Nearly every graduate student receives financial support.

RESOURCES AND OPPORTUNITIES

All the faculty members actively participate in research endeavors, and a number have gained international recognition for their work.

Some of the major facilities in the Department of Chemical Engineering are:

The Advanced Combustion Engineering Research Center (ACERC) is internationally recognized as a leading center for interdisciplinary energy research. Initially founded by the National Science Foundation (NSF) as an engineering research center, ACERC now represents a collaborative effort of faculty with similar research interests and funding from both industrial and government sources. Students and faculty associated with the center pursue experimentation, analysis, computer modeling, and design of combustion systems.

DIPPR Thermophysical Properties Laboratory. Development and management of the DIPPR 801 thermophysical property database is the major pursuit of the DIPPR laboratory. This database, perhaps the best in the world of its kind, is sponsored by the Design Institute for Physical Property Data (DIPPR) of the American Institute of Chemical Engineers (AIChE). Research activities consist of collecting and evaluating literature data on pure component properties and developing correlation and prediction techniques. Experimental projects also compose a significant emphasis of the laboratory.

Catalysis Laboratory. The lab has a thirty-two-year history of productive research in heterogeneous catalysis. Highly interdisciplinary in nature, this research applies principles of kinetics, chemistry, materials science, surface science, and chemical engineering to the understanding of catalyst properties and catalytic reactions.

COURSE DESCRIPTION

CH EN

513.Molecular Modeling. (3)

Fundamentals of quantum mechanics, statistical mechanics, and molecular-level modeling. Basics of computational chemistry and simulations using deterministic and stochastic methods (molecular dynamics and Monte Carlo) to calculate thermodynamic and transport properties of fluids and fluid mixtures.
CH EN 373; or CHEM 463; or concurrent enrollment.

518.Biomedical Engineering Principles. (3)

Application of chemical engineering principles to model physiologic systems and to solve medical problems.
CH EN 374 & CH EN 376; or equivalent.

519.Biochemical Engineering. (3)

Applying chemical engineering principles to biochemical systems.
CH EN 374 & CH EN 386; or concurrent enrollment.

528.Industrial Catalytic Processes. (2)

Fundamentals of catalytic chemistry and materials; applications to important industrial catalytic processes. Includes catalyst materials and preparation, catalyst characterization, fixed-bed reactor design, and catalyst deactivation.
CH EN 386

531.Thermodynamics of Multicomponent Systems. (3)

Fundamental concepts and applications in first and second laws, equilibrium and stability, phase equilibrium, and homogeneous and heterogeneous chemical equilibrium.
CH EN 373; or CHEM 463; or concurrent enrollment.

533.Transport Phenomena. (3)

Transport mechanisms and coefficients and fundamental field equations for momentum, heat, and mass transport, with application to system design.
CH EN 376 & MATH 303; or CH EN 376 & MATH 447; ChEn 476 or concurrent enrollment.

535.Kinetics and Catalysis. (3)

Theories and principles of chemical kinetics, including heterogeneous catalysis and reactor design.
CH EN 386

541.Computer Design Methods. (3)

Computer-aided design and numerical methods of chemical engineering processes.
CH EN 376 & MATH 303; or CH EN 376 & MATH 334; or equivalent.

578.Polymer Science and Engineering. (3)

Foundation science and theory of polymer chemistry and physics and their implications in engineering applications. Topics include polymerization chemistry, structure-property relationships, polymer physics, and transport properties.
CH EN 378; or equivalent.

593R.Special Topics - Intermediate. (1-3)

Special topics for advanced undergraduate students and for graduate students.
Instructor's consent.

601.Directed Graduate Studies. (2)

Guided preparation for department's comprehensive exams and for formulation of research prospectus.
CH EN 531 & CH EN 533 & CH EN 535

610.Principles of Reservoir Engineering. (3)

Reservoir and hydrocarbon classification; fluid flow; primary oil and gas recovery mechanisms; enhanced oil recovery.
Ch En 373 or equivalent.

633.Combustion Processes. (3)

Fundamentals of transport processes in reacting flow systems with specific applications of various combustion processes.
ChEn 533 or equivalent.

641.Combustion Modeling. (3)

Theory of combustion systems and quantitative procedures for computing performance of combustion chambers. Applications include turbulent combustion of gases, sprays, and particulates.
CH EN 633 & MATH 410; or CH EN 633 & CH EN 541

674.Advanced Thermodynamics. (2)

Advanced topics of thermodynamics, including electrolytes, phase equilibrium modeling, nonequilibrium thermodynamics, and calorimetry.
ChEn 531 or equivalent.

687. Statistics for Physics-Based Systems. (3)

Using linear and nonlinear models to design experiments, regress coefficients, and infer confidence intervals for both the regressed coefficients and the predictions for systems with errors in one or several variables.

691R. Seminar for Master's Students. (0.5)

Technical presentations by graduate students, faculty members, and guests.

693R. Special Topics--Graduates. (0.5-6)**698R. Master's Project. (0.5-6)****699R. Master's Thesis. (0.5-9)****733. Coal Combustion. (3)**

Fundamentals of coal combustion and gasification processes, including particle mechanics, devolatilization, heterogeneous oxidation, radiative heat transfer, and combustion of coal in practical flames.
Instructor's consent.

791R. Seminar for Doctoral Students. (0.5)**793R. Selected Topics in Chemical Engineering. (0.5-3)**

Topics vary according to student-faculty interests.

799R. Doctoral Dissertation. (0.5-9)**FACULTY**

Argyle, Morris D. *Associate Professor*, PhD, University of California, Berkeley, 2003. Catalysis

Baxter, Larry L. *Professor*, PhD, Brigham Young University, 1989. Sustainable Energy

Bundy, Bradley C. *Assistant Professor*, PhD, Stanford University, 2009. Bioengineering

Cook, Alonzo D. *Associate Professor*, PhD, Massachusetts Institute of Technology, 1996. Tissue Engineering

Fletcher, Thomas H. *Professor*, PhD, Brigham Young University, 1983. Coal Combustion; Gasification; Gas Turbine Combustion

Harb, John N. *Professor*, PhD, University of Illinois, 1988. Electrochemical Engineering

Hecker, William C. *Associate Professor*, PhD, University of California, Berkeley, 1982. Catalysis; Chemical Kinetics

Hedengren, John D. *Assistant Professor*, PhD, University of Texas, Austin, 2005. Process Control and Optimization

Knotts, Thomas A. *Associate Professor*, PhD, University of Wisconsin, Madison, 2006. Molecular Modeling

Lewis, Randy S. *Professor*, PhD, Massachusetts Institute of Technology, 1995. Bioengineering

Lignell, David O. *Assistant Professor*, PhD, University of Utah, 2008. Reacting Flow Simulation

Pitt, William G. *Professor*, PhD, University of Wisconsin, Madison, 1987. Ultrasonic Delivery of Pharmaceuticals; Biomedical Polymers

Wheeler, Dean R. *Associate Professor*, PhD, University of California, Berkeley, 2002. Electrochemical Engineering; Molecular Modeling

Wilding, W. Vincent *Professor*, PhD, Rice University, 1985. Applied Thermodynamics

CHEMISTRY AND BIOCHEMISTRY

Chair: Burton, Gregory F.
Graduate Coordinator: Dearden, David

C-100 BNSN, Provo, UT 84602-5700
(801) 422-4845
chemgradcat@byu.edu
<http://www.chem.byu.edu>

THE PROGRAMS OF STUDY

Chemistry and biochemistry are fundamental to our understanding of the physical and biological world. The principles and applications of chemistry and biochemistry are diverse, interesting, and challenging. The graduate programs in the Department of Chemistry and Biochemistry are designed to develop well-educated, independent scientists who can contribute in diverse circumstances where chemical/biochemical knowledge and skills are needed.

Approximately thirty faculty are the foundation of our excellent graduate program. The department occupies the 190,000-square-foot Benson Science Building, which provides comfortable, modern laboratories. Extensive instrumentation is available and constantly being replaced or upgraded to support cutting-edge research.

Approximately 100 graduate students provide an essential and dynamic atmosphere for research progress and stimulating discussion. Our postdoctoral students and visiting scientists add depth and diversity to the intellectual atmosphere. Moreover, a strong population of undergraduate research assistants also brings significant strength and enthusiasm to research projects.

Additional information about faculty members and their research interests is available on the department website: <http://www.chem.byu.edu/>

CHEMISTRY AND BIOCHEMISTRY

The Department of Chemistry and Biochemistry offers four degrees: Chemistry-MS, Biochemistry-MS, Chemistry-PhD, and Biochemistry-PhD.

Areas of emphasis include: Analytical Chemistry, Biochemistry, (Molecular Biology), Inorganic/ Materials Chemistry, Organic and Biomolecular Chemistry, and Physical Chemistry.

The vast majority of our graduate students are in the PhD program, and they complete their work in approximately five and one half years. MS program students complete their work in about two and one half years.

Biochemistry - MS

The Biochemistry MS degree provides specialized study on an advanced level. The degree includes about one year of course work beyond the BS degree and a thesis based upon a significant research project. The research will be in areas of biochemical and molecular biological emphasis, such as host pathogen interactions, bioprobes and sensors, signal transduction, or protein structure and function. The added preparation in theory and practice allows the MS biochemist to assume responsibility and supervision beyond that normally given a BS or BA biochemist. The MS degree is adequate preparation for some industry and junior college teaching positions. It is generally not a prerequisite for a PhD degree program.

Requirements for Degree

Credit hours (30): 24 hours of course work and research plus 6 thesis hours (Chem 699R).

- Required courses: Chem 581, 583, 584, 586, 594R (every semester in residence), 601, 694, and other courses as specified by committee.
- Semi-annual progress review, acceptable participation in biochemistry journal club, examinations, and presentations.

- Thesis.
- Final oral examination consisting of two parts: (A) public presentation of original research described in thesis; (B) comprehensive examination on course work, research, and thesis.

FINANCIAL ASSISTANCE

All eligible students in the department's graduate programs who request financial aid are granted tuition for all required graduate courses and a graduate assistantship. These awards are granted on a continuing basis as long as satisfactory progress is being made toward the degree. This financial assistance allows students to be involved full-time in their graduate program, which includes research and course work and may also include teaching and research assistant assignments.

Some highly qualified applicants are offered additional funding through the HIDRA, college fellowships, or Nicholes Maw awards. Other types of financial aid such as internships, scholarships, and student loans may also be available to students who qualify. More information may be obtained from the department office and from the Financial Aid Office.

The department relies on its graduate students to fill many assignments in laboratory and recitation instruction. Unless excused by the faculty, a graduate student would typically be a teaching assistant for at least two semesters for twenty hours a week during residency toward the degree.

RESOURCES AND OPPORTUNITIES

Simmons Center for Cancer Research. The objective of the BYU Simmons Center for Cancer Research is to make significant scientific contributions toward the control and cure of cancer. Intense investigations of oncogenes and their relation to the development of cancer represents a major activity within the center. Faculty and students from the Department of Chemistry and Biochemistry and from the College of Life Sciences contribute their expertise.

Detailed information about the department, our facilities, and programs is available on the department's web site at www.chem.byu.edu, and the cancer research center's site is at <https://cancerresearch.byu.edu/>. We encourage you to explore these sites and to contact the department office for answers to any questions that you may have (see the address information below).

COURSE DESCRIPTION

CHEM

500.(Chem-C S-Geol-Math-MthEd-Phscs-Stat) Business Career Essentials in Science and Math. (1.5)

Introduction for science, math, and statistics majors to careers in industry. Project planning, oral and written business presentations, business accounting, and technology readiness.

514.Inorganic Chemistry. (3)

In-depth treatment of theoretical concepts in inorganic chemistry and solid state, organometallic, and bioinorganic chemistry. CHEM 462; or CHEM 468

518.Advanced Inorganic Laboratory. (2)

Synthesis, characterization, and properties of materials; coordination and organometallic compounds. CHEM 514; Chem 201 or 601 or concurrent enrollment.

521.Instrumental Analysis Lecture. (2)

Modern instrumental methods and basic principles of instrumentation. CHEM 462 & PHSCS 220; or CHEM 467 & PHSCS 220; or CHEM 468 & PHSCS 220

523.Instrumental Analysis Laboratory. (2)

Continuation of Chem 521. Laboratory experience with modern analytical instrumentation. CHEM 521; Chem 201 or 601 or concurrent enrollment.

552.Advanced Organic Chemistry. (3)

Physical aspects of organic chemistry; mechanisms, reaction intermediates, bonding, stereochemical and stereoelectronic effects, molecular orbital theory, Lewis acidity and basicity. CHEM 352M; or CHEM 352; Chem 462 and 463 (or Chem 468).

553.Advanced Organic Chemistry. (3)

Synthetic aspects of organic chemistry; oxidations, reductions, concerted reactions, stereoselectivity, synthetic equivalents, protecting groups. Examples of natural product total synthesis. CHEM 352; or CHEM 352M

555.Organic Spectroscopic Identification. (3)

Theory and practice of spectrometric methods of identifying organic compounds, including infrared, ultraviolet nuclear magnetic resonance, and mass spectrometries.

561.Chemical Thermodynamics. (3)

Development of the principles of chemical thermodynamics, including laws, pure materials, mixtures, equilibria, and elementary statistical mechanics. CHEM 462 & CHEM 463

563.Reaction Kinetics. (3)

Theoretical aspects of chemical kinetics in the gas phase and in solution. Rates and mechanisms in solution, rapid reactions, and other topics. CHEM 462 & CHEM 463

565.Introduction to Quantum Chemistry. (3)

Introduction to physical and mathematical aspects of quantum theory, emphasizing application of the Schrodinger wave equation to chemical systems. CHEM 462 & CHEM 463

567.Statistical Mechanics. (3)

Introduction to classical and quantum statistical mechanics, including Boltzmann, Fermi-Dirac, and Bose-Einstein statistics. Applications of statistical thermodynamics to gases, liquids, and solids. CHEM 462 & CHEM 463

569.Fundamentals of Spectroscopy. (3)

Atomic and molecular spectroscopy and application of group theoretical concepts. Types of experiments and interpretation of data. CHEM 462; or CHEM 468

571.Polymer and Materials Chemistry. (3)

Survey of synthetic and biopolymers, modern materials, and their chemistry, including synthesis, chemical and physical characterization, and applications. Chem 352 or Chem 351M; Chem 462 or Chem 468.

581.Advanced Biochemical Methodology 1. (3)

Analytical and structural determination methods used in biochemical research, including mass spectrometry-based proteomics, immunotechniques, atomic force and electron microscopy, NMR and X-ray diffraction. CHEM 482

583.Advanced Biochemical Methodology 2. (3)

Maintenance and expression of genetic information, the role of nucleic acids in biology at the chemical and structural level, and methods to study and control nucleic acid function as a means of solving biological problems. CHEM 482

584.Advanced Biochemistry Methods 1. (3)

Introduction to current biochemical research methods, techniques, and instrumentation directed toward the isolation and characterization of DNA, RNA, and proteins including, DNA cloning, protein expression, enzyme kinetics, and nucleic acid and protein ligand interactions. CHEM 482

586.Advanced Biochemistry Methods 2. (3)

Continued development of expertise in and the application of biochemical research methods, techniques, and instrumentation building on the skills and experience gained in Chem 584 including, the design and carrying out of directed group research projects. CHEM 584

594R.General Seminar. (0.5)

Research topics presented by faculty and visiting scientists.

596R.Special Topics in Chemistry. (0.5-3)**601.Safe Chemical Practices.** (0.5)

University and department safety policies. Chemical hazards, fire safety, and biosafety, including laws.

CHEMISTRY AND BIOCHEMISTRY

619R.Chemistry of the Transition Elements. (0.5-3)

628R.Student Seminars in Analytical Chemistry. (0.5)

Exposure to and experience in presenting current research and literature reviews in analytical chemistry to peers and faculty.

629R.Spectroscopic Methods of Analysis. (0.5-3)
Chem 521 or equivalent.

629R.Mass Spectrometry. (0.5-3)
Chem 521 or equivalent.

629R.Separation Method of Analysis. (0.5-3)
Chem 521 or equivalent.

655.Advanced Techniques in Nuclear Magnetic Resonance. (1)
Introduction to techniques such as DEPT, COSY, HETCOR, ROESY, INADEQUATE, HMQC, HSQC, and HMBC.
Chem 455 or 555 or equivalent.

659R.Organometallic Chemistry. (0.5-3)
Chem 552 or equivalent.

659R.Bioorganic Chemistry. (0.5-3)
Chem 552 or equivalent.

659R.Natural Products Chemistry. (0.5-3)
Chem 552 or equivalent.

669R.Quantum Chemistry. (3)
Includes time dependent quantum mechanics and computational chemistry.
CHEM 565

688R.Current Biochemistry Literature. (0.5)
Designed to increase the depth of student proficiency in current biochemistry literature and improve their formal presentation skills.

689R.Bioinorganic Chemistry. (0.5-3)
Chem 583 or equivalent.

689R.Genetic Modeling of Human Disease. (0.5-3)
Chem 583 or equivalent.

689R.Regulatory RNA. (0.5-3)
Chem 583 or equivalent.

689R.Proteomics. (0.5-3)
Chem 583 or equivalent.

689R.Advanced Topics in Biochemistry. (0.5-3)
The following topics are rotated: cellular signal transduction, clinical chemistry, biochemical immunology, bioinorganic chemistry, genetic modeling of human disease, molecular biology of cancer, regulatory RNA, proteomics, and structural biochemistry.
Chem 583 or equivalent.

689R.Structural Biochemistry. (0.5-3)
Chem 583 or equivalent.

689R.Cellular Signal Transduction. (0.5-3)
Chem 583 or equivalent.

694.Scientific Writing and Professional Ethics. (1)
Professional standards. Manuscript preparation and attendance at seminars by faculty and visiting scientists.
CHEM 594R

697R.Graduate Research. (0.5-6)
Chem 601 or concurrent enrollment.

699R.Graduate Thesis/Dissertation. (0.5-9)

719R.Materials Chemistry. (1-3)

719R.Selected Topics in Inorganic Chemistry. (0.5-3)
Subjects that may be offered: materials chemistry.

729R.Surface Chemistry and Analysis. (0.5-3)

729R.Microfabrication/Nanotechnology. (0.5-3)

729R.Mass Spectrometry. (0.5-3)

729R.Selected Topics in Analytical Chemistry. (0.5-3)

Subjects that may be offered are: atomic spectroscopy, laser spectroscopy, mass spectrometry, microfabrication/nanotechnology, and surface chemistry and analysis.

769R.Selected Topics in Physical Chemistry. (0.5-3)

Subjects that may be offered include: advanced group theory, advanced techniques in magnetic resonance, calorimetry, molecular structure and spectroscopy, solid-state chemistry, statistical mechanics.
CHEM 565 & CHEM 567

FACULTY

Andersen, Joshua L. *Assistant Professor*, PhD, University of Utah, 2006. Biochemistry

Andrus, Merritt B. *Professor*, PhD, University of Utah, 1991. Organic Chemistry

Asplund, Matthew C. *Associate Professor*, PhD, University of California, Berkeley, 1998. Physical Chemistry

Austin, Daniel E. *Associate Professor*, PhD, California Institute of Technology, 2003. Analytical Physical Chemistry

Burton, Gregory F. *Professor*, PhD, Medical College of Virginia, Virginia Commonwealth, 1989. Biochemistry

Castle, Steven L. *Professor*, PhD, Scripps Research Institute, 2000. Organic Chemistry

Christensen, Kenneth A. *Associate Professor*, PhD, University of Michigan, 1997. Biochemistry

Dearden, David V. *Professor*, PhD, California Institute of Technology, 1989. Analytical/Physical Chemistry

Ess, Daniel H. *Assistant Professor*, PhD, University of California, Los Angeles, 2007. Organic Chemistry

Farnsworth, Paul B. *Professor*, PhD, University of Wisconsin, Madison, 1981. Analytical Chemistry

Goates, Steven R. *Professor*, PhD, University of Michigan, 1981. Analytical Chemistry

Graves, Steven W. *Professor*, PhD, Yale University, 1978. Biochemistry

Hansen, Jaron C. *Associate Professor*, PhD, Purdue University, 2002. Analytical Chemistry

Harrison, Roger G. *Associate Professor*, PhD, University of Utah, 1993. Inorganic/Materials Chemistry

Johnson, Jeremy A. *Assistant Professor*, PhD, Massachusetts Institute of Technology, 2011. Physical Chemistry

Linford, Matthew R. *Professor*, PhD, Stanford University, 1996. Analytical/Materials Chemistry

Michaelis, David J. *Assistant Professor*, PhD, University of Wisconsin-Madison, 2009. Organic Chemistry

Patterson, James E. *Associate Professor*, PhD, University of Illinois at Urbana-Champaign, 2004. Physical Chemistry

Peterson, Matt A. *Associate Professor*, PhD, University of Arizona, 1992. Organic Chemistry

Price, John C. *Assistant Professor*, PhD, Pennsylvania State University, 2005. Biochemistry

Price, Joshua L. *Assistant Professor*, PhD, University of Wisconsin, Madison, 2008. Organic Chemistry

Savage, Paul B. *Professor*, PhD, University of Wisconsin, 1993. Organic Chemistry

Sevy, Eric T. *Associate Professor*, PhD, Columbia University, 1999. Physical Chemistry

Simmons, Daniel L. *Professor*, PhD, University of Wisconsin, Madison, 1986. Biochemistry

Stowers, Kara J. *Associate Professor*, PhD, University of Michigan, 2012. Inorganic/Organic

Watt, Richard K. *Associate Professor*, PhD, University of Wisconsin, Madison, 1998. Inorganic/Biochemistry

Willardson, Barry M. *Professor*, PhD, Purdue University, 1990. Biochemistry

Woodfield, Brian F. *Professor*, PhD, University of California, Berkeley, 1994. Physical Chemistry

Woolley, Adam T. *Professor*, PhD, University of California, Berkeley, 1997. Analytical/Materials Chemistry

CIVIL AND ENVIRONMENTAL ENGINEERING

Chair: Hotchkiss, Rollin H.

Graduate Coordinator: Fonseca, Fernando S.

Associate Chair: Schultz, Grant G.

368 CB, Provo, UT 84602-4081
(801) 422-2811
civil@byu.edu
<http://ceen.et.byu.edu>

THE PROGRAMS OF STUDY

Two degrees are offered through the Department of Civil and Environmental Engineering: Civil Engineering MS and Civil Engineering PhD.

The Department of Civil and Environmental Engineering admits approximately fifty students each year into its programs.

Civil Engineering - PhD

The PhD degree is awarded to candidates who have made a significant contribution to knowledge in a particular specialization of civil and environmental engineering and complete a dissertation. Electronic submission of the dissertation is required. Adequate course work is necessary to provide a foundation of expertise for quality research.

Requirements for Degree

Credit hours

- Candidates with a master's degree: minimum 58 approved semester hours.

These hours include:

- At least 38 hours must be graduate-level courses (up to 20 hours of 500+ level courses can be transferred from the master's degree if approved by the graduate committee)
- A minimum 18 hours dissertation
- Candidates without a master's degree: minimum 56 approved semester hours

These hours include:

- At least 36 hours must be graduate-level courses
- A minimum 18 hours of dissertation

NOTE: All PhD candidates must have 2 hours of Graduate Seminar which are included in the minimum hours.

- Students with no advanced mathematics, statistics, or science in their baccalaureate degree may be required to take additional courses in these areas.
- Program of study: the graduate program of study must be submitted during the first year of doctoral study
- Evaluations: evaluation of the student's graduate program progress by his/her department advisor is required at least twice each academic year.
- Residency requirements: residency is required for the major part of the work. This work must be completed under the specific direction of a graduate faculty member while the student is in residence at BYU. "In residence" is defined as (1) being registered for credit as a graduate student and (2) living and conducting research in the general vicinity of the university, where the student has ready access to research facilities and consultation with the faculty. Further, all work must be completely open for university review and publication. Any exceptions to the above must be supported by written approval from the department and college and obtained in advance of any work being performed. In addition, a doctoral student must register for a minimum of 6 hours in two consecutive semesters.

- Comprehensive qualifying examination: students must take and pass a written comprehensive qualifying examination based on graduate course work. After passing this examination, the student is accepted to candidacy for the doctoral degree. The examination is offered when the candidate completes two semesters of coursework and must be taken at least one year before completion of the degree.
- Prospectus: students must submit and successfully defend a written prospectus on their proposed dissertation research topic at least one year before completion of the degree.
- Dissertation.
- Oral defense of dissertation.
- For a more detailed description of the graduate program requirements, see: <http://ceen.et.byu.edu> and <http://graduatestudies.byu.edu>

FINANCIAL ASSISTANCE

Departmental Scholarships. Master's or PhD candidates are eligible for scholarships each year. Applications may be obtained in January on the department Web site; the awards are given in mid-May for the next academic year. Selection is based on need and on scholastic merit. These scholarships may be received in addition to any assistantships or privately endowed awards unless the total financial aid package exceeds the scholarship limit stipulated by the university.

Research Assistantships. Faculty may have funds from both off-campus and on-campus sources to support research assistants. These awards support students at the current pay rate for up to 28 hours per week depending on eligibility.

Teaching Assistantships. All graduate students are eligible to be TAs. The assistantships range from 10-20 hours per week and consist of teaching labs and grading courses.

RESOURCES AND OPPORTUNITIES

For information on resources and opportunities, please visit <http://ceen.et.byu.edu>

COURSE DESCRIPTION

CE EN

500.(CE En-Me En) Design and Materials Applications. (3)

Applied and residual stress; materials selection; static, impact, and fatigue strength; fatigue damage; surface treatments; elastic deflection and stability--all as applied to mechanical design. ME EN 372; or CE EN 321; or equivalent.

501.(CE En-MeEn) Stress Analysis and Design of Mechanical Structures. (3)

Stress analysis and deflection of structures; general bending and torsion with computer applications to mechanical and aerospace structure design. CE EN 321; or ME EN 372; or equivalent.

503.(CE En-Me En) Plasticity and Fracture. (3)

Tensor algebra; stress and deformation tensors; relationships between dislocation slip, yielding, plastic constitutive behavior, and microstructure development; cracks and linear elastic fracture mechanics. CE EN 203 & ME EN 250 & MATH 303; Senior standing or instructor's consent.

504.(CE En-Me En) Computer Structural Analysis and Optimization. (3)

Matrix stiffness method for 1D, 2D, and 3D skeletal structure classes. Implementing the matrix stiffness method as a computer program. Nonlinear second-order structural analysis. Structural optimization techniques including stress-ratio method, gradient-based methods, and genetic algorithms. CE EN 321; or ME EN 372; or equivalent; linear algebra.

505.Portland Cement Concrete Mixture Design and Analysis. (3)

Properties and testing of freshly mixed and hardened concrete and constituent materials; concrete mixture design and analysis; concrete construction practices; laboratory experimentation. CE EN 306; or equivalent.

507.(CE En-Me En) Linear Finite Element Methods. (3)

Linear static finite element analysis of elastic solids; problem formulation, finite element discretization, and equation solving; stability, interpolation theory, and error estimates. Introduction to underlying continuum mechanics principles. Isogeometric analysis as a generalization of classical finite element analysis; basic principles of analysis-suitable computational geometry. CE EN 321; or ME EN 372

508.(CE En-Me En) Structural Vibrations. (3)

Dynamic analysis of single degree-of-freedom, discrete multi-degree-of-freedom, and continuous systems. Applications include aerospace, civil structures, and mechanical components. CE EN 321; or ME EN 372; or equivalent.

514.Geospatial Environmental Engineering. (3)

Modern software development techniques for civil and environmental engineering. Topics include: design and development of component-based software for desktop and web-based applications; data structures and algorithms for modeling, analysis, and visualization; basic problem-solving techniques; web services; and the management and maintenance of software using code versioning systems. Application areas are focused on civil and environmental engineering problems. CE EN 414 & CE EN 270

521.Seismic-Resistant Steel Buildings. (3)

Background and development of UBC seismic provisions; design of ductile braced frames and steel moment resisting frames; design of diaphragms and collectors. CE EN 421; or equivalent.

523.(CE En-Me En) Aircraft Structures. (3)

Requirements, objectives, loads, materials, and tools for design of airframe structures; static behavior of thin-wall structures; durability and damage tolerance; certification and testing. Airframe component team design project. CE EN 304 & CE EN 321; or CE EN 304 & ME EN 372; or ME EN 250 & CE EN 321; CE En 304 or Me En 250. CE En 321 or Me En 372.

525.Bridge Structures. (3)

Design of composite, continuous beam, and girder bridges, including piers, abutments, floor systems, and bearings; field trips to observe bridge construction and fabrication. CE EN 421 & CE EN 424; or equivalent.

528.Masonry Design. (3)

Introduction to analysis, design, and construction of masonry structures. Compressive, tensile, flexural, and shear behavior of masonry structural components. CE EN 424; or equivalent.

529.Timber Design. (3)

Timber species, composition, and grades; design of beams, straight and tapered glue-lam girders, columns, connections, trusses, shear walls, and structural systems. CE EN 304 & CE EN 321 & CE EN 421; or equivalents.

531.Principles of Hydrologic Modeling (3)

Advanced hydrologic and hydraulic principles with an emphasis on modeling for the purpose of planning and designing draining, flood control, and other water resource facilities. CE EN 431; or equivalent.

534.Hydroinformatics (3)

Principles of hardware and software systems for water and climate data collection, storage, sharing, interpretation, analysis, and modeling. CE EN 414 & CE EN 431

535.Hydraulic Design of Channels and Control Structures. (3)

Design of water conveyance channels and control structures, including siphons, chutes, weirs, flumes, dams, spillways, and outlet works. CE EN 433; or equivalent.

540.Geo-Environmental Engineering. (3)

Hazardous waste statutes and regulations; introduction to hazardous waste treatment, storage, disposal, and monitoring techniques. Geotechnical aspects of environmental engineering. Topics include municipal and hazardous solid waste landfill design and characterization and remediation techniques for contaminated soil and groundwater. CE EN 341 & CE EN 351; or equivalents. CE En 471A or 471 B or concurrent enrollment or instructor's consent.

544.Seepage and Slope Stability Analysis. (3)

Seepage and slope stability analysis of earth dams, levees, excavations, embankments, and natural slopes; construction dewatering, numerical methods, shear strength of soils, limit equilibrium method.
CE EN 341; or equivalent.

545.Geotechnical Analysis of Earthquake Phenomena. (3)

Earthquake magnitude and intensity; design ground motions, elementary dynamics of structures; response spectra; building code provisions; liquefaction and ground failure.
CE EN 321 & CE EN 341; or equivalents.

547.Groundwater Modeling. (3)

Computer simulation of groundwater flow systems; modeling theory, numerical methods, data management, boundary conditions, calibration, and stochastic analysis.
CE EN 341; or equivalent.

551.Water Treatment Facilities Design. (3)

Evaluation, selection, and design of water treatment facilities.
CE EN 451; or equivalent.

555.Environmental Chemistry. (3)

Chemical theory and calculation supporting analysis of major organic and inorganic constituents in environmental engineering, focusing on theoretical understanding of the chemical processes.
CE EN 351; or equivalent.

562.Traffic Engineering: Characteristics and Operations. (3)

Traffic stream characteristics, traffic flow theory, traffic control devices, capacity and level of service, warrants, signal timing and optimization, signal coordination.
CE EN 361; or equivalent.

563.Pavement Design. (3)

Design, construction, evaluation, maintenance, and rehabilitation of flexible and rigid pavements; influence of traffic and environmental factors; mechanistic analysis of pavement structures using computer software.
CE EN 306 & CE EN 341 & CE EN 361

565.Urban Transportation Planning. (3)

Urban transportation planning and decision making, intermodal transportation, land-use transportation interrelationships, transportation demand modeling, site impact analysis, sustainable transportation; livable cities.
CE EN 361; or instructor's consent.

570.(CE En-Me En) Computer-Aided Engineering Software Development. (3)

Programming methods for the development of engineering software. Data structures, architecture, libraries, and graphical user interfaces, with applications to CAD systems.
Me En 373 or C programming.

572.Computer-Aided Geometric Design. (3)

Mathematical theory of free-form curves and surfaces and solid geometric modeling. Bezier and B-spline curve and surface theory, parametric and implicit forms, intersection algorithms, topics in computer algebra, and free-form deformation. Several programming projects.
Proficiency in C programming.

575.(CE En-Me En) Optimization Techniques in Engineering. (3)

Application of computational optimization techniques to constrained engineering design. Theory and application of gradient-based and gradient-free algorithms for unconstrained and constrained nonlinear problems. Robust design methods.
MATH 302; or MATH 313; C, C++, or similar computer language.

594R.Selected Problems in Civil and Environmental Engineering. (1-3)**602.(CE En-Me En) Composite Structures. (3)**

Design and analysis of advanced composite structures; deflections, buckling, and vibration of thin plates and sandwich plates; design guidelines; design examples; project.
CE EN 304; or ME EN 372

604.(CE En-Me En) Continuum and Solid Mechanics. (3)

Derivation of partial differential equations of continuum mechanics. Closed-form solution of classical problems in elasticity. Theory of beams, plates, and axisymmetric shells with closed-form solutions. Large displacement strain tensors, stress tensors, equilibrium equations, beam theory, and plate theory. Constitutive theory including nonlinear elasticity, viscoelasticity, plasticity, and hyperelasticity.
CE EN 321; or ME EN 372

607.(CE En-Me En) Nonlinear Finite Element Methods. (3)

Nonlinear dynamic finite element analysis of solids. Nonlinear continuum mechanics, finite element formulation, and elementary solution algorithms for nonlinear algebraic problems. focusing on hyperelastic solids. Advanced topics in isogeometric analysis, computational analysis-suitable geometry, and adaptivity. An introduction to dynamics; basic methods of time integration, such as Newmark and alpha methods.
CE EN 507; or ME EN 507

635.Sediment Transport and River Restoration. (3)

Sediment transport concepts applied to stream restoration and stream restoration concepts including geomorphology and stream classification. Lectures, field trips, guest lecturers.
CE EN 535; or CE En 433 and instructor's consent.

641.Advanced Soil Mechanics. (3)

Advanced discussion and analysis of shear strength of soils; finite-element stress analysis distribution in soils; critical state soil mechanics, unsaturated soil mechanics. CEEn 341 or equivalent.

644.Advanced Foundation Engineering. (3)

Lateral pressures and earth retaining systems, axial and lateral capacities of piles and drilled shafts, foundations subjected to vibratory loadings, foundations on collapsible and expansive soils, soil improvement techniques. CE En 341 or equivalent.

648.Groundwater Contaminant Transport. (3)

Fate and transport of contaminants in groundwater. Advection, dispersion, adsorption, biodegradation, and computer simulation focusing on the theory and mathematics used to model these processes. CE EN 547

651.Wastewater Treatment Facilities Design. (3)

Evaluation, selection, and design of wastewater treatment facilities. CE EN 551

654.Water and Wastewater Advanced Treatment Processes. (3)

Treatment and disposal of industrial wastes; basic industries and their waste problems. CE EN 551

662.Traffic Simulation and Analysis. (3)

Concept of traffic simulation, modeling techniques, calibration and validation, simulation output comprehension, shock wave analysis, queuing theory, use of simulation software. CEEn 562 or instructor's consent.

664.Transportation Site Planning. (3)

Characteristics of transportation site planning; traffic impact analysis; principles of access design; driveway, site circulation, and parking lot design; permitting of proposed developments. CE EN 562

681.Civil Engineering Business Operations. (1.5)

Different legal forms of business ownership, business performance metrics, accounting, business development, marketing, operations management, market forces and competition and business strategy. CE En 471A, 471B, 472; or equivalents.

682.Civil Engineering Project Management. (1.5)

Managing diversity, building effective teams, team coaching, evaluations, managing conflict and conflict resolution, project management approaches, risk management, critical path, partnering, managing outside consultants, staffing, negotiations, and principles of leadership. CE En 471A, 471B, 472; or equivalents.

691R.Civil and Environmental Engineering Seminar. (0.5)**694R.Selected Problems in Civil and Environmental Engineering. (1-3)**

698R.Master's Project. (1-3)
Graduate committee's consent.

699R.Master's Thesis. (1-9)
Graduate committee's consent

794R.Selected Topics in Civil and Environmental Engineering. (1-3)

797R.Research for Doctoral Students. (1-9)

799R.Doctoral Dissertation. (1-9)
Graduate committee's consent.

FACULTY

Ames, Daniel P. *Associate Professor*, PhD, Utah State University, 2002. Civil and Environmental Engineering

Balling, Richard J. *Professor*, PhD, University of California, Berkeley, 1982. Structural Mechanics

Borup, M. Brett *Associate Professor*, PhD, Clemson University, 1985. Environmental Engineering

Fonseca, Fernando S. *Associate Professor*, PhD, University of Illinois, 1997. Structures

Franke, Kevin W. *Assistant Professor*, PhD, Brigham Young University, 2011. Geotechnical Engineering

Guthrie, W. Spencer *Associate Professor*, PhD, Texas A&M University, 2002. Materials and Pavements

Hotchkiss, Rollin H. *Professor*, PhD, University of Minnesota, 1989. Hydraulics and Hydrology

Jensen, David W. *Professor*, PhD, Massachusetts Institute of Technology, 1986. Structures: Advanced Composites

Jones, Norman L. *Professor*, PhD, University of Texas, Austin, 1990. Geotechnical Engineering

Miller, A. Woodruff *Professor*, PhD, Stanford University, 1975. Hydrology; Hydraulics

Nelson, E. James *Professor*, PhD, Brigham Young University, 1994. Surveying; GIS; Hydrology

Richards, Paul W. *Associate Professor*, PhD, University of California, San Diego, 2004. Structural Engineering

Rollins, Kyle M. *Professor*, PhD, University of California, Berkeley, 1987. Geotechnical Engineering

COMMUNICATION DISORDERS

Saito, Mitsuru *Professor, PhD,*
Purdue University, 1988.
Transportation Engineering

Schultz, Grant G. *Associate Professor,*
PhD, Texas A&M University, 2003.
Traffic Engineering

Scott, Michael Andrew *Assistant*
Professor, PhD, The University
of Texas at Austin, 2011.
Computational Science,
Engineering and Mathematics

Williams, Gustavious P. *Associate*
Professor, PhD, Northwestern
University, 1994. Environmental
Geotechnology

COMMUNICATION DISORDERS

Chair: Fujiki, Martin

Graduate Coordinator: McPherson,
David L.

136 TLRB, Provo, UT 84602-8605
(801) 422-4318
<http://education.byu.edu/comd>

THE PROGRAMS OF STUDY

The separate but overlapping disciplines represented by the Department of Communication Disorders involve the study of the processes and disorders of hearing, speech, and language. The department integrates principles and methods of acoustics, anatomy, psychology, linguistics, medicine, physiology, and rehabilitation to prepare students to more effectively help persons of all ages who have either congenital or acquired impairments to hearing, speaking clearly, participating in conversations, or any of the other aspects of communication.

The graduate program in the department provides a mixture of academic course work, clinical experience, and research involvement. Students are expected to master knowledge related to treating persons with disorders and to apply this knowledge in clinical activities at BYU and at other professional settings in the community. Strong performance in both course work and clinical activities is required, as is the successful completion and defense of a thesis. Because clinical training requires broad expertise, no clinically relevant topics are excluded from coverage in course work or clinical training; however, student research activities are channeled into topic areas in which faculty have focal expertise.

The master's degree program in the department focuses only on the speech-language pathology part of communication disorders and prepares students to (a) work

competently with clients of all ages in all professional settings, (b) conduct research and communicate findings to peers and cooperating professionals, (c) meet requirements for national certification, state licensure, and school licensure, (d) qualify for and excel at doctoral study if desired, and (e) maintain currency in the discipline through lifelong learning.

Approximately 20 students per year are admitted into the program. Students generally complete their programs in two years.

Communication Disorders - MS

The discipline of speech-language pathology involves the study of the anatomy and physiology of the speech production mechanism, the normal and impaired development of speech, disorders of articulation, voice disorders, stuttering and related disorders of speech rate and rhythm, speech acoustics, speech perception, and swallowing disorders. Speech-language pathology also includes the study of normal and impaired language development and language processing, the assessment of children's language and related social and cognitive abilities, the treatment of language impairments, and the assessment and treatment of aphasia.

Requirements for Degree

Credit hours 48: 37 hours of coursework, 5 hours of clinical practicum (ComD 688R), and 6 hours of thesis (ComD 699R)

- Required courses: ComD 600, 610, 630, 633, 634, 636, 657, 658, 674, 675, 676, 679, 690R
- Minor (in related field): optional and in addition to all required major classes.
- Residence: see university residence requirements. Transfer of graduate courses taken elsewhere is not guaranteed and will be evaluated on a course-by-course basis.

- Thesis.
- Examinations: (A) pass ASHA Praxis exam in speech-language pathology; (B) oral defense of thesis.

FINANCIAL ASSISTANCE

Financial assistance in the Department of Communication Disorders is given to graduate students in the form of graduate assistantships. These assistantships involve helping faculty in course management or research. Awardees are selected by faculty from those applying for assistantships on the basis of suitability for the work needed. Other financial aid is available in the form of supplementary awards such as partial-tuition scholarships.

RESOURCES AND OPPORTUNITIES

The Department of Communication Disorders is housed in the John Taylor Building and as such is part of the BYU Comprehensive Clinic. This clinic allows speech-language pathology students to work with programs in clinical psychology, marriage and family therapy, and LDS Family Services in interdisciplinary cooperation on a variety of clinical cases. The clinic also allows for shared access to audiovisual services, computers and networks, and tests and therapy materials.

The BYU Audiology Clinic focuses on the assessment and treatment of hearing disorders as part of the BYU Speech and Language Clinic. It is also involved in monitoring the hearing ability levels of university employees for workplace safety compliance.

The BYU Speech and Language Clinic is staffed by graduate students under faculty supervision and focuses on assessing and treating the speech and language disorders of students, faculty, staff, missionaries, and the public in conjunction with the department's academic and educational needs.

Research Facilities and Equipment.

The facilities supporting research and clinical work include evoked potential and brain mapping, digital audio recording and editing instrumentation, spectrographic, laryngographic, and nasometric analyses of speech and voice production, stroboscopic digital video laryngoscopy, and audiovisual equipment for conversational language sampling and analysis.

COURSE DESCRIPTION

COMD

600. Research Methods. (3)

Research methods in audiology and speech-language pathology. Applying statistical techniques; professional literature and writing. Stat 121 or equivalent.

610. Assessment and Diagnosis. (3)

Performing evaluations and determining how assessment informs clinical decision making and intervention in communication disorders.

630. Early Child Language Intervention. (3)

Theories and practices in language treatment, emphasizing assessment and intervention for developmentally young children.

633. Dysphagia Management. (3)

Assessment and treatment of swallowing disorders.

634. Traumatic Brain Injury. (2)

Assessment and treatment of speech and language problems associated with traumatic brain injury.

636. Multicultural Issues in Speech-Language Pathology. (3)

Speech and language assessment and intervention with persons from culturally and linguistically diverse backgrounds. Specific topics include cultural diversity, bilingualism, and use of interpreters/translators. ComD 350 or equivalent.

657. Voice and Resonance Disorders. (3)

Assessment and treatment of disorders of the speaking voice.

658. Fluency Disorders. (3)

Assessment and treatment of fluency disorders, including stuttering.

674. Autism and Severe Disabilities. (3)

Assessment and treatment of persons with multiple handicaps, including augmentative communication training.

675. Motor Speech Disorders. (3)

Neuropathology, symptomology, clinical assessment, and treatment of adult motor speech disorders.

676. Aphasia. (3)

Perspectives on the neurology, clinical assessment, and rehabilitation of aphasic language disturbances in adults.

679. School-Age Language Disorders. (3)

Impact, assessment, and treatment of language impairment in children, emphasizing evaluation and intervention for school-aged children.

688R. Practicum in Communication Disorders. (1)

Instructor's consent.

690. Seminar in Speech-Language Pathology. (1-2)

Current topics and in-depth issues in speech-language pathology.

COMMUNICATIONS

693R.Directed Individual Study. (1-3)

Instructor's consent.

699R.Master's Thesis. (1-6)

FACULTY

Brinton, Bonnie *Professor, PhD,*
University of Utah, 1981. Child
Language Impairment

Channell, Ron W. *Associate Professor,*
PhD, University of Utah, 1983.
Language Acquisition

Culatta, Barbara *Professor, PhD,*
University of Pittsburgh, 1975.
Child Language Impairment

Dromey, Christopher *Professor, PhD,*
University of Colorado, 1995.
Speech and Voice Physiology

Fujiki, Martin *Professor, PhD,*
University of Utah, 1980. Child
Language Impairment

Harris, Richard W. *Professor, PhD,*
Purdue University, 1978. Hearing
Science; Perception

McPherson, David L. *Professor, PhD,*
University of Washington, 1972.
Audiology; Hearing Science;
Electrophysiology

Nissen, Shawn L. *Associate Professor,*
PhD, Ohio State University, 2003.
Speech Science

Tanner, Kristine *Assistant Professor,*
PhD, University of Utah, 2005.
Voice Disorders

COMMUNICATIONS

Graduate Program Manager:

Jackson, Debby *Graduate*

Coordinator: Robinson, Tom

360 BRMB, Provo, UT 84602-2500
(801) 422-2997

comms_secretary@byu.edu, tom_robinson@byu.edu, debby_jackson@byu.edu

<http://comms.byu.edu>

THE PROGRAMS OF STUDY

The School of Communications offers a broad-based master's program designed to promote critical thinking and research with a particular focus on the interaction between media and society.

The program of study prepares students with the theoretical background, methodological expertise, and critical thinking skills needed both for continued studies at the doctoral level and informed professional practice. It emphasizes communications theory and quantitative and qualitative research methodologies. Specialized topical areas include literature of journalism, communication history, media and religion, international media and communication, communication ethics and law, persuasion, public relations and leadership, and media effects.

One graduate degree is offered through the School of Communications: Mass Communications-MA. A minor in mass communications is also offered.

Approximately fifteen students are admitted to the master's program each fall semester. The anticipated time spent in completing requirements for the master's degree is two years.

Mass Communications - MA

The master's program is intended to serve as preparation for:

- Doctoral studies where theory, teaching, research, and publication are emphasized.
- Advancement in communications professions.

Beyond the courses required by the department, students select-in consultation with advisors-the specific courses that best meet their goals and interests. Generally, students with non-communications undergraduate majors will be expected to concentrate on communications electives. Those with a communications baccalaureate are encouraged to seek broadening electives outside the department.

Requirements for Degree

Credit hours (33): minimum 27 hours of course work.

- Required courses: Comms 600, 602, 610, 611, 616 (15 hours).
- Electives: 12 credit hours from Comms 604, 607, 612R, 619, 621, 622R, 623, 624, 625, 627, 691R, 692R, 695R, and/or interdisciplinary substitute courses (with prior approval). Electives determined in consultation with advisor and committee.
- Thesis (Comms 699R, 6 hours minimum) or project (Comms 698R, 6 hours minimum).
- Examinations: (A) written comprehensive examination; (B) final oral examination and defense of thesis or project.

FINANCIAL ASSISTANCE

The principal types of financial aid and awards available to mass communications graduate students are teaching and research assistantships, along with some full- and half-tuition scholarships. Under the direction of faculty, teaching assistants oversee undergraduate classes and labs in advertising, broadcasting, journalism, and public

relations. Research assistants work closely with graduate faculty in their research and publication activities. Applications for assistantships and scholarships are available online at www.byu.edu/gradstudies.

RESOURCES AND OPPORTUNITIES

Facilities. The School of Communications is housed in the George H. Brimhall Building. Also affiliated with the department are news media, advertising, public relations and broadcast laboratories and television studios. Graduate students interested in applied studies may structure work in these media outlets into their programs.

Communications Research Center. The Research Center offers state-of-the-art technology and software. Mass communications graduate students have access to staffed statistics and eye-tracking laboratories.

Other resources include a focus group room with audio and video recording capabilities and a social media monitoring center. All resources are supervised by our Director of Communications Research.

For a more detailed description of the graduate program requirements, go to comms.byu.edu.

COURSE DESCRIPTION

COMMS

600.Introduction to Graduate Studies in Communications. (3)

Introduction to graduate education, communications theory, research, and academic writing. Faculty research programs presented.

602.Qualitative Research Methods. (3)

Major methods of qualitative research used in communications studies.

604.Communications History and Historical Research Methods. (3)

In-depth investigation of the history of mass media, including study of historical research methods.

607.International Media and Communications. (3)

Role of communication internationally and its impact on culture, ethics, morality, and politics around the world. Comparison of communication systems, media flows, and communications among countries.

610.Studies in Communications Theory. (3)

Nature and content of contemporary mass communication theory.

611.Communications/Social Science Research Methods. (3)

Major methods of research used in communications studies. Stat 121 or equivalent and/or social science research methods.

612R.Research Practicum. (1-3)

Practical experience in research under direction of individual faculty.

616.Media Effects: Individual, Family, and Society. (3)

Media's roles in major social settings. Capstone course, including preparation for comprehensive exams. Comms 600 or concurrent enrollment.

619.Gender, Race, and Class in Mass Communications. (3)

Issues related to gender, race, and class in the communication process. Implications of current developments in critical theory and issues of diversity.

621.Media and Religion. (3)

Seminar regarding the interface of media and religion.

622R.Seminar on Media and Current Societal Issues. (3)

Preannounced societal issue or issues (such as environment, impact of new technologies, vulnerable audiences, consumerism, nonprofits, health communications, terrorism, etc.).

623.Literature of Journalism. (3)

Critiquing journalism theories and philosophy ranging from traditional libertarian ideals to contemporary movements of public journalism and public service broadcasting.

624.Seminar on Media Law and Ethics. (3)

Review of literature and research on ethics. Legal and regulatory relationship between government and communications; legal research methods.

625.Integrative Persuasive Communications. (3)

Persuasion theories and links to practice of integrated communications, including promotion, advertising, public relations, direct marketing, and branding.

627.Public Relations Theory and Leadership. (3)

Relationship of strategic communications and stakeholder theory to current issues in the field, including reputation, image, apologia, trust, transparency, power, leadership, conflict resolution, and change.

691R.Special Studies in Communications. (1-3)

Individual study with a graduate faculty member. Approval of committee chair and graduate coordinator.

692R.Professional Practicum. (1-3)

Individual work in professional communications settings, with oversight and assessment by graduate faculty member. Committee chair and graduate coordinator approval.

COMPARATIVE ARTS AND LETTERS

695R.Topical Seminar. (1-3)

Seminar on focused pre-announced topic relating to specific media issues.

698R.Master's Project. (1-6)

699R.Master's Thesis. (1-6)

FACULTY

Adams, Edward E. *Professor*, PhD, Ohio University, 1993. Media Management and Economics

Boyle, Kristoffer *Assistant Professor*, PhD, Texas Tech University, 2008. Journalism, Newspapers and Editing

Brubaker, Pamela *Assistant Professor*, PhD, Pennsylvania State University, 2012. Public Relations and Social Media

Callahan, Loy Clark *Associate Professor*, PhD, University of Oklahoma, 2002. Media Ecology; Intercultural Adaptation; Cultural Diffusion

Callister, Mark A. *Associate Professor*, PhD, University of Arizona, 1997. Visual Imagery in Print Advertisements; Communication Strategies Within Non-Profit Organizations

Carter, Edward L. *Professor*, JD, Brigham Young University, 2003. First Amendment Law and Policy; Media Regulation

Church, Scott *Assistant Professor*, PhD, University of Nebraska, Lincoln, 2013. Media and Rhetoric

Cressman, Dale L. *Associate Professor*, PhD, University of Utah, 2003. Broadcast and Print Journalism History

Cutri, Christopher *Associate Professor*, MFA, Art Center College of Design, 1997. Creative Advertising

John, Kevin *Assistant Professor*, PhD, University of Utah, 2015. Health Communications and Media

Plowman, Kenneth *Associate Professor*, PhD, University of Maryland, 1995. Conflict Resolution; Public Relations Management; High-Tech Public Relations

Randle, Quint B. *Associate Professor*, PhD, Michigan State University, 2001. Magazines; New Media; Newspapers

Robinson, Thomas E. *Professor*, PhD, University of Southern Mississippi, 1996. Portrayal of the Elderly in Media Advertising

Thomsen, Steven R. *Professor*, PhD, University of Georgia, 1994. Media Effects; Media and Adolescent Socialization

Wakefield, Robert I. *Associate Professor*, PhD, University of Maryland, 1997. International Communication

Wilson, Christopher *Assistant Professor*, PhD, University of Florida, 2014. Public Relations Management

COMPARATIVE ARTS AND LETTERS

Chair: Sederholm, Carl
Associate Chair: Macfarlane, Roger

3008 JFSB, Provo, UT 84602-6702
(801) 422-4448
<http://cal.byu.edu/cmpst/>

THE PROGRAMS OF STUDY

Widely used in the Renaissance, the term humanities (*humanitas* or *studia humanitatis*) refers to the study of human intellectual and artistic creativity. Humanities is both a general academic category (inclusive of literature, history, philosophy, and the history and criticism of art and music) and a discipline in its own right with a methodology for the critical study of intellectual history and aesthetics. The interdisciplinary humanistic fields that the department comprises—humanities, classics, and comparative literature—offer students unusual latitude in pursuing graduate education in the humanities, disciplined by insistence on substantial foreign language skills, competence in critical theory and practice, and the development of scholarly discipline.

One degree is offered through the Department of Humanities, Classics, and Comparative Literature: Comparative Studies-MA. This program admits from five to ten students per year. The MA in comparative studies is designed as a two-year program, and most full-time students are able to complete the MA within two years, usually defending the thesis during spring or summer term of the second year.

Art History and Curatorial Studies - MA

The Comparative Arts and Letters department will no longer admit students into the Art History program starting in 2015.

The MA in Art History and Curatorial Studies is designed to prepare students for advanced graduate study at the PhD level and to provide a foundation for students desiring a career in a museum or art gallery.

Requirements for Degree

Credit hours (30 hours): minimum of eight ARTHC 500-level seminars (two theory and six topical) plus 6 thesis hours (ARTHC 699R). One 3-hour curatorial museum internship may be taken in place of a topical seminar. Topical seminars beyond the art history area of the Department of Visual Arts and all internships must be approved through the student's committee chair.

- Required courses: the theory core (ARTHC 500, 505) is required. Other seminars will be selected in consultation with the graduate coordinator and graduate committee chair. The MA program is designed to allow maximum exposure to the various areas of art history and curatorial studies.
- Language requirement: reading knowledge of French or German before entering the program; similar competency required in the other of these languages by end of program.
- Select major area of emphasis: ancient, early Christian/Byzantine, medieval, Renaissance, baroque, eighteenth-century, nineteenth-century, American, European modernism, contemporary, curatorial studies.
- Select a graduate committee based on your major area during first semester of studies.
- Examinations: (A) comprehensive exam; (B) oral defense of thesis.
- Thesis.

FINANCIAL ASSISTANCE

Aid is available in the form of full or partial tuition grants, teaching and research assistantships, internships, and (for advanced students) some student instructorships. Upon admission to the respective programs, candidates will be considered for all of these possibilities based upon merit and availability of department resources. Financial aid is normally limited to two years.

RESOURCES AND OPPORTUNITIES

The Department of Humanities, Classics, and Comparative Literature utilizes the Humanities Technology and Research Support Center and the Reading-Writing Center for the College of Humanities:

The Humanities Technology and Research Support Center provides an array of technological tools, resources, and expertise to foster quality research and scholarship in the College of Humanities. The center is especially active in the production of teaching and research materials. In addition to computer and audio equipment, the center has a variety of video capabilities and in the past few years has become a world leader in computer-assisted language instruction and translation. The department also owns CD ROM databases for classical Greek and Latin texts, the Thesaurus Linguae Graecae and Thesaurus Linguae Latinae, as well as the complete works of many modern authors.

Faculty from the department currently serve as officers in the Classical Association of the Midwest and South (CAMWS), the International Comparative Literature Association (ICLA), the National Association of Humanities Educators (NAHE), the American Conference on Romanticism, and the Society for the Advancement of Scandinavian Study (SASS). In addition, the journals *Scandinavian Studies* and *Prisms: Essays in Romanticism* are edited by department faculty members, assisted by graduate students from the department.

For more information, see <http://cal.byu.edu/cmpst/comp-studies/resources-and-opportunities/>

E-mail: comparativestudies@byu.edu.

COURSE DESCRIPTION

ARTHC

500.Art in Theory: Spectatorship. (3)

Review and critique of major theoretical approaches in art history, emphasizing the philosophical relationship between viewer and object.

Graduate status.

505.Art in Theory: Language. (3)

Review and critique of major theoretical approaches in art history, emphasizing the recent interest in language and semiotics.

Graduate status.

520R.Studies in Ancient Art. (3)

Selected topics in Egyptian, Greek, and Roman art.

530R.Studies in Medieval Art. (3)

Selected topics in early Christian, Byzantine, Romanesque, and Gothic art.

540R.Studies in Renaissance Art. (3)

Selected topics in Northern and Southern Renaissance art.

550R.Studies in Baroque Art. (3)

Selected topics in northern and southern baroque art.

COMPARATIVE ARTS AND LETTERS

560R.Studies in Eighteenth- and Nineteenth-Century Art. (3)

Selected topics in eighteenth- and nineteenth-century art of Europe and America.

570R.Studies in Modern and Contemporary Art. (3)

Selected topics in modern and contemporary art of Europe and America.

590R.Studies in Curatorship. (3)

Selected topics in curation and the museum.

595R.Foreign Language Readings for Art Historians. (3)

Special instruction in reading French or German scholarly texts.

595R.French Readings for Art Historians. (3)

Special instruction in reading French scholarly texts.

595R.German Readings for Art Historians. (3)

Special instruction in reading German scholarly texts.

599R.Academic Internship. (1-8)

Professional museum experience with a curatorial mentor. ArthC graduate student status.

600R.Individual Study. (0.5-8)

In-depth study into any chosen art-historical era.

699R.Master's Thesis. (0.5-6)

CMPST

610.Introduction to Contemporary Critical Thinking. (3)

A broad interdisciplinary perspective on contemporary literary and aesthetic theory and critical methods as these relate to the study of literature and the arts. CmLit 310, Hum 350, Clsscs 420; or equivalents.

615.Colloquium in Comparative Studies. (3)

Introduction to a variety of critical methods through presentations of work in progress by graduate and visiting faculty. Topics vary. CMPST 610

620R.Studies in Periods and Movements. (3)

Literature, philosophy, and/or the arts of a particular period or movement in cultural history. Problems of periodization. Topics vary. CMPST 610

625R.Area Studies. (3)

Literature, philosophy, and/or the arts of a particular geographical area. Topics vary. CMPST 610

630R.Studies in Genres and Forms. (3)

Topics vary and include epic, tragedy, comedy, narrative, historiography, film. CMPST 610

640R.Studies in Themes and Types. (3)

Topics vary and include Eden, Arthur, Don Juan, Faust, Don Quixote, Ulysses, Troy. CMPST 610

650R.Interrelations of the Arts. (3)

Interrelations between various art forms, especially literature and one other art (literature and art, film, music, etc.). Topics vary. CMPST 610

660R.Critical Theory and Methods. (3)

Theoretical and practical criticism; problems in critical theory. Topics vary and include aesthetics, cultural theory, aspects of contemporary theory. CMPST 610

670R.Studies in the Classical Tradition. (3)

Studies in the cultures of classical antiquity and their influence on later cultural history. Topics vary. CMPST 610

680RDirected Readings. (3)

699R.Master's Thesis. (1-9)

Graduate coordinator's consent.

GREEK

620R.Greek Poets. (3)

Detailed study of one major Greek poet or poets. Topics vary. 400-level Greek poetry course or equivalent.

625R.Greek Prose Writers. (3)

Detailed study of one major Greek prose author or authors. Topics vary. 400-level Greek prose course or equivalent.

640R.Studies in Genre. (3)

Major genres (epic, tragedy, comedy, historiography, etc.). Topics vary. 400-level Greek course or equivalent.

LATIN

620R.Latin Poets. (3)

Detailed study of a major Latin poet or poets. Topics vary. 400-level Latin poetry course or equivalent.

690R.Seminar in Latin. (3)

Graduate seminar on one topic in Roman literature, culture, and history. Topics vary. 400-level Latin course or equivalent.

625R.Latin Prose Writers. (3)

Detailed study of a major Latin prose writer or writers. Topics vary. 400-level Latin prose course or equivalent.

FACULTY

Ancell, Matthew *Assistant Professor*, PhD, University of California, Irvine, 2007. Humanities; Seventeenth-Century Spanish and English Literature and the Arts

Bay, Stephen M. *Associate Professor*, PhD, University of Illinois, Urbana-Champaign, 2006. Classics; Classical Textual Criticism; Papyrology; Ancient Prose Fiction

Benfell, V. Stanley *Professor*, PhD, New York University, 1994. Comparative Literature; Medieval and Renaissance Literature (Italian, French, English)

Call, Michael Josiah *Assistant Professor*, PhD, Yale University, 2007. Humanities; Seventeenth-Century French Literature and Culture

Christenson, Allen J. *Professor*, PhD, University of Texas, Austin, 1998. Humanities; Precolombian Maya and Mesoamerican Literature, Art, and Culture; Early Modernism; North American Art and Culture; Latin American Culture

Colson, Robert L. *Assistant Professor*, PhD, University of California, Irvine, 2010. Humanities; Modernism; Post-Colonial Studies; Narrative Theory

Esplin, Marlene Hansen

Handley, George B. *Professor*, PhD, University of California, Berkeley, 1995. Humanities; Nineteenth- and Twentieth-Century American, Caribbean, and Latin American Culture; Ethnic Arts; Cultural Theory

Jeppesen, Seth A.

Jensen, Heather *Associate Professor*, PhD, University of Kansas, 2007. Nineteenth- and Early Twentieth-Century European Art and Culture; Gender Studies; Critical Theory

Johnson, Mark J. *Professor*, PhD, Princeton University, 1986. History of Roman, Early Christian, Byzantine, and Medieval Art and Architecture

Kramer, T. Nathaniel *Associate Professor*, PhD, University of California, Los Angeles, 2004. Humanities; Twentieth-Century Literature; Scandinavian Studies; European Modernism; Literary Theory

Lawson, Francesca *Associate Professor*, PhD, University of Washington, 1988. Humanities; Ethnomusicology; Chinese Narrative Performance

Macfarlane, Roger T. *Associate Professor*, PhD, University of Michigan, 1991. Classics; Republican and Augustan Latin Literature

Oscarson, Christopher *Associate Professor*, PhD, University of California, Berkeley, 2006. Humanities; Nineteenth- and Twentieth-Century Scandinavian Literature; Film

Parry, Joseph D. *Professor*, PhD, University of Utah, 1995. Humanities; Medieval and Renaissance Studies (especially English, German, Italian)

Peacock, Martha *Professor*, PhD, Ohio State University, 1989. History of Netherlandish Art

Peek, Cecilia M. *Associate Professor*, PhD, University of California, Berkeley, 2000. Classics; Hellenistic History; Roman Imperial History; Greek and Latin Literature

Peer, Larry H. *Professor*, PhD, University of Maryland, College Park, 1969. Comparative Literature; Romanticism; Theory

Pope, Michael F.

Sederholm, Carl H. *Associate Professor*, PhD, University of Utah, 2002. Humanities; Early American Literature and Culture; American Gothic; American Religion; Popular Culture; Cultural Theory

Sondrup, Steven P. *Professor*, PhD, Harvard University, 1974. Comparative Literature; Nineteenth- and Twentieth-Century Literature

Soper, Kerry D. *Associate Professor*, PhD, Emory University, 1998. Humanities; Nineteenth- and Twentieth-Century American Studies; Popular Culture

Stanford, Charlotte *Associate Professor*, PhD, Pennsylvania State University, 2003. Medieval Studies; Art History; Gothic Architecture; Gothic Revival

Swensen, James *Assistant Professor*, PhD, University of Arizona, 2009. American Art and Architecture, History of Photography

Yamada, Marc T.

COMPUTER SCIENCE

Chair: Goodrich, Michael A.

Associate Chair: Ventura, Dan

Graduate Coordinator: Giraud-Carrier, Christophe

3361 TMCB, Provo, UT 84602-6576

(801) 422-3027

graduate@cs.byu.edu

<https://cs.byu.edu/>

THE PROGRAMS OF STUDY

The Department of Computer Science offers two degrees: an MS in Computer Science and a PhD in Computer Science.

The MS degree is designed to prepare students either to be technically capable of leading development teams in industrial software development or to be ready to continue on for a PhD. The PhD degree prepares students to be researchers and teachers either in industry or academia. Areas of particular emphasis are listed under Resources and Opportunities and under research faculty interests.

The expected duration of the MS program for full-time students who enter without deficiencies is one and a half years. Depending on the number of deficiencies, some students may require additional semesters. Students may not enter the PhD program with deficiencies. For full-time students in the PhD program, the expected duration is three years for those entering the program with an MS in computer science and from four to four and a half years for those entering without an MS in computer science. These expectations assume that students take a full graduate load and begin and complete the steps in their thesis or dissertation research in a timely manner.

Computer Science - PhD

Mission Statement. Ph.D. students in the Computer Science Department are prepared to be technical problem solvers, are competent in the state of the art, and have mastered a particular aspect of Computer Science. They are trained to identify and clearly formulate problems, to develop and analyze algorithmic solutions, and to direct research. All Ph.D. students are active in one of the Department's research labs, working closely with a faculty advisor. Ph.D. graduates make a novel contribution to Computer Science in the form of a dissertation and scholarly publications. They are an asset to their employers, as they demonstrate increased insight into formulating and solving problems. Furthermore, they have the skills to see the discipline clearly and to lead out on their own. Graduates are prepared with a solid background in both theoretical foundations and practical training for the lifelong learning necessary in this fast-moving field.

Requirements for Degree

Credit hours (66): minimum 48 course work hours plus 18 hours of dissertation research (CS 799R). Course work must include C S 611 and may also include up to 30 hours of credit transferred from a completed MS degree.

- Qualifying process: (A) pass courses demonstrating broad proficiency in computer science and (B) produce and present a satisfactory research paper.
- Dissertation proposal: demonstrate preparedness to do dissertation research by (A) presenting an overview of the dissertation research area, and (B) proposing a research program within the context of this area.
- Dissertation
- Dissertation defense: make an oral presentation that defends the dissertation research.

- Residency: PhD students are expected to be resident for the full duration of their PhD program. Exceptions may be granted if the advisor and graduate committee approve (in advance) a leave of absence.
- Teaching: all students must teach at least one course.
- While in the PhD program, students are expected to make steady and satisfactory progress toward their degree. Progress reviews take place three times each year. Students who fail to make appropriate progress will be dropped from the program.

FINANCIAL ASSISTANCE

The Computer Science Department recognizes that most students require financial assistance to remain in school. The department has funds in the following forms: teaching and research assistantships and tuition awards.

RESOURCES AND OPPORTUNITIES

The Computer Science Department offers research in the following areas:

Artificial intelligence and machine learning

Computational science and control

Computer networks, systems, and security

Data and text analytics

Graphics and computer vision

Human-computer interaction and software development

For more detailed information please see our Web site: <https://cs.byu.edu/>

COURSE DESCRIPTION

C S

500.(C S-Chem-Geol-Math-MthEd-Phscs-Stat) Business Career Essentials in Science and Math. (1.5)

Introduction for science, math, and statistics majors to careers in industry. Project planning, oral and written business presentations, business accounting, and technology readiness.

501R.Advanced Topics in Computer Science. (1-3)

Advanced undergraduate- and graduate-level subjects as announced before each semester.
Instructor's consent.

513.Robust Control. (3)

Introduction to the analysis and design of feedback systems guaranteed to perform well in spite of model uncertainty.
Math 313 or equivalent.

557.Computer-Aided Geometric Design. (3)

Free-form curves and surfaces; mathematical theory and algorithms. B-spline curves and surfaces, subdivision surfaces, T-splines, free-form deformation, and intersection algorithms. Several programming projects.
C S 240, Math 343; or equivalents.

601R.Graduate Topics in Computer Science. (3)

Graduate-level subjects and new graduate courses as announced before each semester.
Instructor's consent.

611.Theoretical Foundations of Computing. (3)

Proofs (deductive and inductive reasoning), computability (models of computability and computability issues), and complexity (time and space bounds, nondeterminism, and complexity classification).
CS 252 or equivalent; CS 312 or instructor's consent.

618.Computational Biology. (3)

Algorithms for DNA sequence analysis. Heuristics analyzed and developed for NP-complete problems including alignment, phylogeny, secondary structure predictions, protein folding, and microarray analysis.
C S 240, 252, 312; or equivalents.

628.Empirical Software Engineering. (3)

Empirical research in software engineering. Experimental and observational studies, statistical methods, and historically relevant search results.
C S 428 or equivalent.

630.Advanced Programming Languages Theory. (3)

Advanced coverage of the theory of the design, implementation, and semantics of programming languages and type systems.
C S 330 or equivalent.

650.Computer Vision 1. (3)

Machine vision, image segmentation, mathematical morphology, image enhancement and filtering, edge detection, feature extraction, neighborhood operators, region growing, boundary detection, scene segmentation, and matching.
CS 450 or equivalent.

651.Computational Inference and Recognition in Visual Domains. (3)

Mathematical representations and modern Machine Learning techniques for the interpretation and recognition of Visual Data (images, video, etc.).
C S 450 and C S 478; or equivalents.

652.Information Extraction and Integration. (3)

Information extraction from structured, semistructured, and unstructured documents, including Web documents; integrating heterogeneous source information; theoretical foundations of information modeling; topics of current interest.
C S 452 (or equivalent) and/or 553.

653.Information Retrieval. (3)

IR modeling, IR query languages, text indexing and searching, retrieval evaluation, query and text operations, parallel and distributed IR, Web searching.

655.Advanced Computer Graphics. (3)

Advanced computer graphics systems programming and architecture, including ray tracing, radiosity, animation, and physically based modeling.
CS 455 or instructor's consent.

656.Interactive Software Systems. (3)

Fabrication of interactive experiences in the context of emerging technologies; recent advances in human-computer interaction.
C S 455 and C S 456; or instructor's consent

660.Computer Networks. (3)

Computer networking, software architecture, organization, protocols, routing, global networks, local networks, internetworking, standards, and applications.
CS 460 or equivalent.

665.Advanced Computer Security. (3)

Authentication and authorization using digital credentials.
CS 465 or instructor's consent.

670.Multi-Agent Systems. (3)

Introduction to fundamental concepts emphasizing current literature. Topics include game theory, repeated play games, Arrow's impossibility theorem, negotiation, search, and learning.
CS 470 or equivalent; CS 478 or instructor's consent.

673.Computational Creativity. (3)

Project-based course for understanding creativity as a way to increase the robustness of intelligent systems while applying AI/ML tools to challenging problems.
C S 470 or 478 or instructor's consent.

COMPUTER SCIENCE

676.Advanced Topics in Data Mining. (3)

Data mining process, data warehousing concepts, text mining, ethical issues, meta-learning, and key success factors.

C S 478 or equivalent.

677.Bayesian Methods in Computer Science. (3)

Applying Bayesian methods useful for incorporating confidence or belief into problems in computer science, allowing computers to better handle uncertainty.

CS 470 or instructor's consent.

678.Advanced Neural Networks and Machine Learning. (3)

Advanced models, algorithms, and approaches in neural networks and machine learning.

CS 478 or equivalent.

679.Advanced Natural Language Processing. (3)

Exploratory data analysis in large collections of text particularly emphasizing techniques for text classification, text clustering, and topic identification.

One or more of C S 401R, 478, 479, 677, Stat 551, 651 (or equivalents).

686.Advanced Model Checking. (3)

Techniques for managing state explosion and specialized algorithms for verifying classes of infinite state systems.

CS 486 or equivalent.

698R.Graduate Special Projects. (1-3)

Graduate-level special projects and mentored learning experiences. Instructor's consent.

699R.Master's Thesis. (0.5-6)

Committee chair's consent.

705.Scholarship in Computer Science. (3)

Computer science scholarship, including research methods, literature review, course instruction, and writing, presenting, and evaluation of computer science research work.

Instructor's consent.

712R.Topics in Algorithmic Decision Processes. (1-3)

Latest research in the field of algorithmic decision processes. Recent papers read, presented, and discussed.

C S 412 and instructor's consent.

750.Computer Vision 2. (3)

Advanced topics in computer vision: radiometric model; photometric stereo; shape from shading; monocular, binocular models; perspective projective geometry; image matching; depth from stereo; exterior, relative, interior, absolute orientation; optical flow.

C S 650

755R.Topics in Computer Graphics. (3)

Latest research in the field of computer graphics. Recent papers read, presented, and discussed.

C S 655 and instructor's consent.

778R.Topics in Neural Networks and Machine Learning. (3)

Advanced topics and readings in neural networks and machine learning.

C S 678

786R.Readings in Model Checking. (3)

Focused readings and projects as suggested by class interest and current trends.

C S 686

799R.Doctoral Dissertation. (0.5-18)

Committee chair's consent.

FACULTY

Adams, R. Brent *Professor*, MFA, University of Utah, 1992. 3-D Computer Graphics; Animation

Barrett, William A. *Professor*, PhD, University of Utah, 1978. Computer Vision; Image Processing; Pattern Recognition

Burton, Robert P. *Professor*, PhD, University of Utah, 1973. Hyperdimensional Computer Graphics; Visualization

Clement, Mark J. *Professor*, PhD, Oregon State University, 1994. Parallel Processing; Bioinformatics; Computational Sciences

Egbert, Parris K. *Professor*, PhD, University of Illinois, 1992. Computer Graphics; Visualization; Virtual Reality; Animation

Farrell, Ryan *Assistant Professor*, PhD, University of Maryland, 2011. Computer Vision

Flanagan, J. Kelly *Professor*, PhD, Brigham Young University, 1993. Computer Architecture; Performance Evaluation; Digital System Design

Giraud-Carrier, Christophe G. *Associate Professor*, PhD, Brigham Young University, 1994. Data Mining; Machine Learning; Computational Health Science

Goodrich, Michael A. *Professor*, PhD, Brigham Young University, 1996. Human-Robot Interaction; Artificial Intelligence

Holladay, Seth *Assistant Professor*, PhD, Brigham Young University, 2013. Animation

Jones, Michael D. *Associate Professor*, PhD, University of Utah, 2001. Computer Generated Natural Phenomena; Computer Graphics; Animation

Martinez, Tony *Professor*, PhD, University of California, Los Angeles, 1986. Machine Learning; Neural Networks

Mercer, Eric G. *Associate Professor*, PhD, University of Utah, 2002. Software Testing, Debug, Verification, and Analysis

Morse, Bryan S. *Professor*, PhD, University of North Carolina, 1994. Computational Vision; Image Processing; Medical Imaging; Computer Graphics

Ng, Dennis *Associate Professor*, PhD, Kansas State University, 1991. Information Retrieval, Database System

Ringger, Eric K. *Associate Professor*, PhD, University of Rochester, 2000. Natural Language Processing; Text Mining

Seamons, Kent E. *Associate Professor*, PhD, University of Illinois, 1996. Security; Privacy; Usable Security

Sederberg, Thomas W. *Professor*, PhD, Purdue University, 1983. Computer Graphics; Computer-Aided Geometric Design

Seppi, Kevin *Professor*, PhD, University of Texas, 1990. Bayesian and Other Models for Artificially Intelligent Decision Making

Snell, Quinn O. *Professor*, PhD, Iowa State University, 1997. Parallel Programming; Bioinformatics; Computational Sciences

Ventura, Dan *Professor*, PhD, Brigham Young University, 1998. Machine Learning; Artificial Intelligence; Computational Creativity

Warnick, Sean C. *Associate Professor*, PhD, Massachusetts Institute of Technology, 2003. Control Theory; Optimization; Information and Decision Algorithms

Wingate, David *Assistant Professor*, PhD, University of Michigan, 2008. Machine Learning

Zappala, Daniel M. A. *Associate Professor*, PhD, University of Southern California, 1990. Computer Networks; Wireless Networking, Internet Applications and Infrastructure

COUNSELING PSYCHOLOGY AND SPECIAL EDUCATION

Chair: Fischer, Lane
Counseling Psychology Graduate Coordinator: Jackson, Aaron P.
School Psychology Graduate Coordinator: Heath, Melissa
Special Education Graduate Coordinator: Hansen, Blake
Counseling Psychology Graduate Coordinator: Jackson, Aaron P.

340 MCKB, Provo, UT 84602-5093
(801) 422-3857
cpsesec@byu.edu
<http://education.byu.edu/cpse>

THE PROGRAMS OF STUDY

The Department of Counseling Psychology and Special Education prepares educators and professionals who work with individuals, small groups, and organizations/systems. The programs offered in the department all pursue at least two common goals. The first is to help individuals enhance the quality of their lives through meaningful personal, educational, and career development. A second common goal is to assist people in overcoming barriers to learning and to experience success and happiness in life. These barriers include unsupportive environments and individuals' difficulties in thinking, learning, making decisions, relating to others, understanding the impact of their behavior, and so forth.

Faculty implement a scientist-practitioner model through which students and faculty enhance learning through research and inquiry. Further, in dealing with those whom they serve, students apply the principles learned from research evidence. Since their work is often highly personal, it is essential that students possess and develop integrity, using professional standards of ethical conduct. They must also develop the knowledge and skills essential to promote positive change in individuals struggling with important aspects of their lives. The settings in which graduates typically serve include public and private schools, colleges, and universities.

Each program assists students in planning individual course work, receiving supervised practical experience, and obtaining appropriate credentials (certification and licensure).

Three degrees are offered through the Department of Counseling Psychology and Special Education: Special Education-MS; School Psychology-EdS; and Counseling Psychology-PhD.

The average number of students admitted varies by program as follows:

Special Education 6 every year
School Psychology 12 every year
Counseling Psychology 6 every year

Counseling Psychology - PhD

The PhD in counseling psychology is accredited by the American Psychological Association (Committee on Accreditation), 750 First Street NE, Washington, DC 20002; phone: (202) 336-5979; fax: (202) 336-5978. It is psychological in nature and is based on the scientist-practitioner model of training. The scientist-practitioner model is an integrated approach to training that acknowledges the interdependence of theory, research, and practice.

COUNSELING PSYCHOLOGY AND SPECIAL EDUCATION

The counseling psychology program at BYU emphasizes the educational, developmental, and preventive functions of counseling psychologists. Students are primarily prepared to work as counseling psychologists in counseling centers and in academic departments in university and college settings. Students are also prepared to make remedial interventions. Graduates typically accept positions as counselors or psychologists in college or university counseling centers or as scholars/faculty members in counseling psychology or counselor education programs. Others serve in agencies or private practice as licensed psychologists.

Requirements for Degree

Credit hours: 106 plus dissertation and internship.

- Required courses: consult department program documents.
- Residence: minimum two consecutive full-time semesters while matriculated in the doctoral program (minimum 6 credit hours each semester) on the BYU Provo campus.
- Skill requirement: consult department.
- Pre-doctoral internship (2,000 hours).
- Dissertation.
- Examinations: (A) counseling performance evaluations; (B) written comprehensive examination at completion of course work; (C) oral defense of dissertation.

FINANCIAL ASSISTANCE

Graduate Assistantships. Graduate assistantships include working with selected faculty members on research projects, curriculum development, and other assignments for 5 to 20 hours per week. Several other organizations on campus, such as the Counseling and Psychological Services, often request students to serve as graduate assistants.

CPSE Partial-Tuition Scholarships.

Applications are awarded on the basis of scholarship and financial need. Contact the department secretary for application forms, deadlines, and additional information about departmental financial assistance.

MSE Scholarships. A small number of modest, specific-interest scholarships are also available. Students may apply through the CPSE department.

University Financial Aid and Scholarships. Other sources of financial aid are available to students through the Financial Aid Office, A-41 ASB, Provo, UT 84602-1009. International students can contact the International Students Services Office at internationalservices.byu.edu, then select the "Scholarship" link.

BYU Graduate Studies offers several sources for support such as Graduate Mentoring Awards and Graduate Student Research Fellowship Awards.

RESOURCES AND OPPORTUNITIES

Computer Laboratories. Computer laboratories provide graduate students access to the university's computers, enabling students to use several programs, such as SPSS and SAS, to analyze research data. These terminals also permit access to the Internet, library databases, etc. Wireless connections are also available in many locations on campus.

Graduate Student Project and Research Laboratory. Space is provided for graduate students who are working with faculty on research, evaluation, and development projects.

Study Areas. Graduate study areas are available in the CPSE Graduate Lab, the McKay School of Education Technology Education Computing Lab, and the Harold B. Lee Library.

For a more detailed description of the graduate program requirements, view the department Web page.

COURSE DESCRIPTION

CPSE

601. Current Issues and Research: Principles of Behavior. (3)

Introduction to the current issues and research behind the principles, concepts, and experimental foundation of behavior analysis. Admission to special education master's program or instructor's consent.

602. Child and Adolescent Social/Emotional Assessment and Intervention. (3-4)

Theory of assessment and intervention for youth with behavioral, social, and emotional problems. Evidence-based interventions focusing on individual, group, and school-wide application. Assessments are aligned with DSM-V and IDEA identification systems. Interventions focus on evidence-based practice. Admission into CPSE graduate program.

605. Ethics, Professional Roles, and Standards. (3)

Introduction to the profession of school psychology; ethics, professional roles, and standards of practice, focusing particularly on school-based settings. Admission to one of the CPSE graduate programs.

606. Psychoeducational Foundations. (3)

Basic educational and counseling philosophy; tests and measurement theory; professional roles and challenges; the school counselor--psychologists' personal impact on students and programs.

607.Bilingual Assessment. (1.5)

Assessment and educational intervention for children from non-English-language and other diverse backgrounds. Utilizing nonverbal and alternative forms of assessment. CPSE graduate major status.

608.Biological Basis of Behavior. (3)

Biological basis of human behavior: relationship between neurological processes and behavior; medications used in treating various disorders.

CPSE graduate major status.

609.Academic Assessment and Interventions. (4)

Curriculum-based evaluation integrated with standardized academic assessment of reading, writing, and math. Identifying academic needs; developing research-based interventions; setting goals; monitoring progress; and adapting interventions as needed. CPSE 532 or equivalent; admission into CPSE graduate program.

610.Consultation Within School and Family Systems. (3)

Models and methods of consultation with teachers, parents, and professionals.

611.Special Education Law, Regulations, and Policies. (1.5)

Overview of laws, regulations, and policies related to special and general education and professional practice in school psychology. CPSE graduate major status.

613.Autism Spectrum Disorders. (1-3)

Overview of characteristics, etiology, and prevalence of Autism Spectrum Disorders (ASD); teaches strategies and skills supporting children's learning and daily functioning; review of instruction strategies, classroom organization, and teaming with families and professionals. Admission into CPSE graduate program or instructor's consent.

614.Applied Behavioral Assessment and Intervention. (3)

Functional assessment of behaviors using formal and informal behavioral observations. Utilizing collected data to develop and monitor behavioral interventions.

615.Academic and Behavioral Problem Solving via MTSS. (3)

Principles, procedures, and strategies for academics and classroom behavior management using Multi-Tiered System of Supports and evidence-based practices to assist at-risk learners in mastering academic and behavioral competencies for success in school and life.

Admission to a graduate program.

618.Ethics, Professional Conduct, and Legal Issues in Special Education. (3)

Core professional and ethical compliance principles, laws and regulations to guide policy issues, and problem solving using a legal reference for working with students who are at risk.

Admission to special education master's program or instructor's consent.

619.Positive Behavior Support: Managing Challenging Behaviors. (3)

Prepares special educators to treat challenging problem behaviors. Building on universal behavioral strategies by using targeted and intense interventions required for students with severe behavioral challenges, referred to as Tiers 2 and 3 problems.

CPSE 601

620.Evidence-Based Academic Intervention for RTI. (3)

Prepares learners to work collaboratively within a school-wide multi-tiered system of support to assess individual student academic needs, to use data to plan instruction, to monitor student progress and make changes as needed.

CPSE 601; CPSE 614 or 615; CPSE 688R; CPSE 699R.

622.Principles and Theories of Learning. (3)

Learning and cognitive development theories and their application to attitudinal and behavioral change.

629.(CPSE - IP&T) Introduction to Research. (3)

Introduction to the design options available for conducting basic and applied educational research and how to read and write research reports. Quantitative, qualitative, and mixed methods along with ideas for protecting human subjects are discussed.

644.Career Development and Assessment. (3)

Theories of career development in lifespan and career counseling. Assessing interests, values, and other characteristics related to career decision making.

646.Counseling Theory and Interventions. (3)

Various theories of counseling, current research, processes, and micro-skills training for interviewing and relationship building.

647.Psychometric Foundations and Assessment of Intelligence. (3)

Testing and measurement theory and experience in administering, scoring, and interpreting various standardized and individual intelligence tests. Admission to graduate study in counseling/school psychology or counseling psychology.

648.Group Counseling and Intervention. (3)

Primarily group approaches to personal and social counseling and guidance, including skill-streaming groups, divorce and loss groups, parent education groups, grief therapy interventions, and problem-focused interventions.

COUNSELING PSYCHOLOGY AND SPECIAL EDUCATION

649.Human Growth and Development. (3)

Psychoeducational aspects of developmental theory across the life span, including psychosocial, moral, ego, cognitive, faith, and identity. Developmental implications in the counseling process.

650.Social Psychology. (3)

Current theories and research on social interactions and their implications for understanding human thoughts, feelings, and behavior.

651.(CPSE - IP&T) Statistics 1: Foundations. (3)

Emphasis on conceptual understanding and practical application of descriptive and basic inferential statistics to decision making.

653.(CPSE-IP&T) Qualitative Research 1 (Intro to Qualitative Research). (3)

Provides an introduction to qualitative inquiry in education, emphasizing major assumptions of qualitative research, a survey of prominent qualitative approaches, differences between various qualitative approaches and more traditional qualitative strategies, and practice with basic qualitative research skills such as interviewing, transcription, data analysis, and report writing.
CPSE 629

655.Crisis Intervention. (3)

Human crises; preventive, developmental, and remedial interventions within school and family systems.

656.Spiritual Values and Methods in Psychotherapy. (3)

Spiritual values and perspectives, issues, and approaches in counseling and psychotherapy.

673.Single-Subject Research Design. (3)

Application of applied behavior analysis in designing and conducting single-subject research in school and other applied settings. Admission to special education master's program or instructor's consent.

678R.Practicum in School Psychology. (1-3)

Supervised experiences in observing, planning, and implementing effective assessment, intervention, and monitoring strategies in school settings. Admission into a CPSE graduate program.

679R.Practicum in Counseling Psychology. (1-3)

Clinical experience in individual counseling, group counseling, consultation, testing, in-service, career and education guidance, and/or therapeutic interventions in an educational setting under supervision. Admission into a CPSE graduate program.

688R.Academic Internship. (1-3)

Practical experience in a public school setting.
CPSE 678R

688R.Internship: School Psychology. (1-3)

Concluding supervised practical experience in assessment, counseling, and interventions in a school setting. Testing, consultation, and other activities of the school psychologist.
CPSE 678R

688R.Internship: Special Education. (1-3)

Practical experience in assessment, teaching, and mentoring in a school setting.
CPSE 678R

690R.Seminar in Special Education. (0.5-4)

693R.Directed Individual Study. (0.5-3)

Instructor's consent.

697R.Special Projects. (0.5-6)

Stat 552 and CPSE 672 or equivalent.

699R.Master's Thesis. (0.5-6)

702.Philosophy and Theories in Counseling Psychology. (3)

Introduction to counseling psychology. Philosophical assumptions and theoretical perspectives. Integration of science and practice within a consistent philosophical framework.

710.Ethical/Legal Standards and Issues. (3)

Ethical and legal standards and issues in the helping professions.

715.Diagnosis and Treatment of Mental Disorders. (3)

Diagnosis, classification, and treatment of emotional problems and mental disorders.

725.Objective and Projective Personality Assessment. (3)

Objective assessment of personality (including MMPI) as well as projective techniques (including TAT). Pragmatic psychological report writing.
Instructor's consent.

730.(CPSE - IP&T) Hierarchical Linear Modeling. (3)

Conceptual and applied processes in hierarchical linear modeling with cross sectional nested data and longitudinal repeated measures data.
CPSE 651 & CPSE 745

744.Advanced Career Counseling. (3)

Survey of current research in career psychology. Advanced career counseling techniques focusing on the interface between career and personal issues and the use of assessment.

745.(CPSE - IP&T) Statistics 2: Multiple Regression. (3)

An examination of multiple regression as an inferential statistical procedure in its own right and as a foundation for subsequent courses in structural equation modeling, path analysis, and factor analysis.
CPSE 629 & CPSE 651

746.Supervision and Consultation Theory. (3)

Theoretical models and approaches to consultation and supervision of counseling; practice in supervising counselors in training.

747.(CPSE - IP&T) Structural Equation Modeling. (3)

Examination of Structural Equation Modeling with expressions in Path Analysis, Confirmatory Factor, and Latent Variable Modeling.
CPSE 651 & CPSE 745

748.Advanced Theory of Group Counseling. (3)

Theory and methods of group counseling; advanced skills in conducting group therapy.

750.Research Theory and Methods in Counseling Psychology. (3)

Advanced counseling process and outcome research methods. Includes between groups, within-subjects experimental designs; quasi-experimental and times series designs; discovery-oriented, small N, and qualitative research strategies. Admission to PhD program in counseling psychology.

751.Counseling Multicultural and Diverse Populations. (3)

Multicultural competency training on issues of race, ethnicity, gender, sexual orientation, age, socioeconomic status, disability, and religion. Knowledge, skills, and awareness applied to counseling.

753R.(CPSE - IP&T) Qualitative Research 2 (Advanced). (3)

An in-depth exploration of qualitative research approaches and data analyses. Options include AR/PAR/Self-Study/Narratives; Hermeneutics, Phenomenology; Ethnography/Case Study; Grounded Theory; emerging methods.
CPSE 653

776R.Advanced Practicum 1: Counseling Psychology. (0.5-3)

Clinical experiences conducted primarily through collaboration with BYU's Counseling and Career Center and focusing on career and educational counseling. Admission to graduate study in counseling psychology.

777R.Advanced Practicum 2: Counseling Psychology. (0.5-3)

Clinical experiences and psychotherapeutic training conducted primarily through collaboration with BYU's Counseling and Career Center. Admission to graduate study in counseling psychology.

778R.Counseling Psychology Clerkship. (1-3)

Clinical experiences and psychotherapeutic training conducted off campus in an approved community agency clinical setting. Admittance into doctoral program in counseling psychology.

779R.University Teaching Practicum. (3)

University teaching under supervision of a faculty member, including teaching or team teaching an undergraduate course and/or team teaching a master's level course (or portions of courses). Admission to graduate study in counseling psychology.

788R.Predoctoral Counseling Psychology Internship. (1-9)

One calendar year of full-time or two years of half-time supervised clinical counseling and psychotherapy for a total of 2,000 clock hours.
CPSE 779R; All other course work, and comprehensive examinations.

789.(CPSE - IP&T) Meta Analysis. (3)

An overview of qualitative research synthesis, methods for systematic literature reviews and meta-analysis. A balanced approach between conceptualization and application with practice using existing data sets and statistical packages.
CPSE 629 & CPSE 651

790R.Couple and Family Counseling. (0.5-3)

790R.Advanced Seminar. (0.5-3)
Admission to graduate work.

799R.Doctoral Dissertation. (0.5-9)

Formal report and defense of substantive research topic designed to make an original contribution to knowledge in the field. Completion of skill requirements.

FACULTY

Allen, G.E. Kawika *Assistant Professor*, PhD, University of Missouri Columbia, 2011. Multicultural Psychology; Polynesian Americans; Spirituality

Beecher, Mark E. *Clinical Professor*, PhD, Brigham Young University, 1998. Individual and Group Psychotherapy; Disabilities; Psychological and Psychoeducational Assessment

EDUCATIONAL INQUIRY, MEASUREMENT AND EVALUATION (PROGRAM)

Caldarella, Paul *Associate Professor*, PhD, Utah State University, 1998. Social Skills; Behavioral Assessment and Intervention

Charlton, Cade T.

Dyches, Tina T. *Professor*, EdD, Illinois State University, 1995. Severe Disabilities, Family Adaptation to Disability

Fischer, Lane *Associate Professor*, PhD, University of Minnesota, 1991. Counseling; School Psychology

Gabrielsen, Terisa *Assistant Professor*, PhD, University of Utah, 2012. Autism; ADHD; Interdisciplinary Treatment and Support; Gifted and Talented

Gibb, Gordon S. *Associate Professor*, PhD, University of Utah, 1994. Mild/Moderate Disabilities

Gleave, Robert L. *Clinical Professor*, PhD, Brigham Young University, 1981. Postmodern Thought; Group Work and Research

Griner, Derek *Assistant Clinical Professor*, PhD, Brigham Young University, 2008. Multicultural Psychology, Disability Services

Hansen, Blake *Assistant Professor*, PhD, University of Kansas, 2010. Behavioral Analysis and Severe Disabilities

Heath, Melissa Allen *Associate Professor*, PhD, Texas A&M University, 1996. Conflict and Violence; Crisis Management, Parent Training

Jackson, Aaron P. *Associate Professor*, PhD, University of Missouri, Columbia, 1993. Career Development of Native Americans; Counseling Philosophy and Theories

Kellems, Ryan *Assistant Professor*, PhD, University of Kansas, 2011. Transition; Video Modeling; Autism; Secondary Special Education

Knestel, Andrea *Assistant Clinical Professor*, PhD, Syracuse University, 2010. Health Psychology; Religiosity

Prater, Mary Anne *Professor*, PhD, Utah State University, 1987. Mild/Moderate Disabilities; Multicultural Special Education

Richards, P. Scott *Professor*, PhD, University of Minnesota, 1988. Religion and Mental Health; Spirituality and Psychotherapy; Research Methods

Sabey, Christian Vance

Scharman, Janet S. *Associate Clinical Professor*, PhD, University of Utah, 1992. School Counseling; Individual and Group Counseling; Qualitative Research Methods; Student Development

Smith, Timothy B. *Professor*, PhD, Utah State University, 1997. Moral Issues; Spirituality; Quality Relationships; Family

Worthen, Vaughn E. *Clinical Professor*, PhD, University of Kansas, 1993. Career Counseling; Positive Psychology; Supervision

Young, Ellie L. *Associate Professor*, PhD, University of South Florida, 2001. Gender Issues in Education; Self-Concept

EDUCATIONAL INQUIRY, MEASUREMENT AND EVALUATION (PROGRAM)

Graduate Coordinator: Sudweeks, Richard R.

150-M MCKB, Provo, UT 84602-5095
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<http://education.byu.edu/eime>

THE PROGRAMS OF STUDY

This is an inter-departmental PhD program offered by the David O. McKay School of Education. The program is designed to prepare graduates who have the knowledge, expertise, experience, and character traits necessary to work productively as researchers, evaluators, policy analysts, assessment specialists, and/or professors in a variety of settings including (a) universities, (b) federal, state, and local education agencies, (c) private research and evaluation firms, and (d) testing companies.

Educational Inquiry, Measurement and Evaluation - PhD

Students are expected to complete 71 credit hours in the following categories:

- Required courses (21 credit hours): EIME 630, EdLF 650, IP&T 653 or CPSE 653; IP&T 745 or CPSE 745; IP&T 674R, 752, 761
- Elective methods courses (12 credit hours)

Students are expected to complete a coherent set of at least four elective courses selected from the categories listed below. Students may enroll for directed individual study on a selected topic in any category in which they have already completed at least one course.

EDUCATIONAL INQUIRY, MEASUREMENT AND EVALUATION (PROGRAM)

1. *Foundations of Inquiry in Education* CPSE 789

2. *Designs for Inquiry (at least one course must be completed in this area)*

EIME 720; CPSE 673

3. *Qualitative and Quantitative Methods (one course must be completed in this area)*

Soc 706R; IP&T 753 or CPSE 753;
IP&T 730 or CPSE 730; IP&T 747 or
CPSE 747

4. *Educational Measurement and Evaluation*

IP&T 754; IP&T 692R or EIME 693R

Content Area Specialty (12 credit hours)

Each student is expected to choose a content area specialty from one of the four options listed below. Students are expected to complete at least four courses within their chosen area of focus including one or two required courses depending on the specialty area selected.

1. *The Preparation and Development of Educators*

Required courses: TEd 611, TEd 612 and TEd 613

Elective courses: Complete at least one course from the following:

TEd 610, 660, 661, 665, CPSE 605, 611, 618

2. *Language, Literacy, and Communication*

Required courses: TEd 620

Elective courses: At least 9 additional credits selected from the following

TEd 603, 622, 623; ComD 601, 630, 679

3. *Learning and Instruction*

Required courses: 6 credit hours including two of these three (CPSE 622, IP&T 620, or TEd 611)

Elective courses: At least 6 additional credit hours selected from the following

CPSE 622, 649, 693R; IP&T 564, 664, 692R, 693R or 750

4. *Social-emotional Development and Intervention*

Required course: CPSE 649 (3 credit hours)

Elective courses: At least 9 additional credit hours selected from the following

CPSE 614, 655, 693R; IP&T 750; MFHD 623, 660

5. *Education Policy Analysis*

Required courses: EDLF 750 & 780

Elective courses: At least 6 hours selected from EDLF 721, 722, or 694R

- Seminar (2 credit hours)

Students are expected to enroll in the weekly seminar (EIME 690R) in each fall and winter semester during their first two years in the program. Students earn 0.5 credits per semester.

- Internships (6 credit hours)

After completing their coursework, each student will be expected to participate in two 3-credit internships or apprenticeships selected from EIME 781, 782, 783, 784, 785, or 786. Internship placements will be based on the interests of each student as well as the needs of the sponsoring agency. Applications must be submitted in writing and approved by both the students' graduate advisory committee and the EIME advisory council prior to beginning the experience.

- Dissertation: (EIME 799R: 18 credit hours)

FINANCIAL ASSISTANCE

Students admitted to this program are required to be enrolled as full-time, resident students. Financial assistance is offered in the form of tuition stipends and research assistantships (20 hours per week).

COURSE DESCRIPTION

EIME

630. **Philosophical and Psychological Foundations of Inquiry in Education.** (3)

The formative ideas in philosophy and psychology used to conduct and evaluate scholarly inquiry in education. Includes basic issues, inquiry methods, and forms of scholarly analysis.

690R. **Seminar.** (0.5)

Weekly seminar with EIME faculty and other professionals engaged in conducting research, measurement, evaluation, or policy analysis projects. Enrollment in the EIME program.

693R. **Directed Independent Study.** (1-3)

Faculty-supervised readings as arranged by student.

720. **Design-Based Research Methods in Education.** (3)

Principles of formative experimentation in studying developing interventions in natural contexts. Challenges of selecting and integrating inquiry methods, resolving implementation problems, linking programmatic variables to theory, assessing effects, and drawing valid conclusions.

781. **Internship in Educational Research.** (3)

Mentored, applied experience working on educational research projects for a college, university, government agency, foundation, or private company. IP&T 682 plus at least three other courses in research methods and statistical analysis.

782. **Internship in Educational Measurement and Assessment.** (3)

Mentored, applied experience working for a company or government agency that develops tests or administers testing programs. Written reports required. IP&T 652 & IP&T 752 & IP&T 754

EDUCATIONAL LEADERSHIP AND FOUNDATIONS

783.Internship in Educational Evaluation. (3)

Mentored, applied experience working as an evaluator for a college, university, government agency, or private company that conducts evaluations for clients. IP&T 661 & IP&T 761; or EDLF 665 & IP&T 761

785.University Teaching Apprenticeship. (3)

Mentored experience teaching a university course. Advisor and department chair's consent.

786.Design and Analysis Consulting Apprenticeship. (3)

Mentored, applied experience working as a design and analysis consultant for a university. IP&T 674R & IP&T 682 & IP&T 745

799R.Dissertation. (1-18)

Successfully complete and defend a dissertation. Successful completion of required course work.

FACULTY

Ferrin, Scott E. *Professor*, EdD, Harvard University, 1996. School Law; Policy; Politics; Language Policy

Geo-JaJa, MacLeans A. *Professor*, PhD, University of Utah, 1986. International Development Education; Global Economic Restructuring; Human Development in Africa; Economics of Education

Hallam, Pamela *Associate Professor*, PhD, University of Utah, 2006. Instructional Leadership; Human Resources; Educational Administration

Hilton, Sterling C. *Associate Professor*, PhD, Johns Hopkins University, 1996. Longitudinal Data Analysis; Structural Equation Modeling; Statistics Education

Hite, Julie M. *Professor*, PhD, University of Utah, 1999. Leadership; Organizational Behavior; Organizational Theory; Strategy and Networks

Hite, Steven J. *Professor*, EdD, Harvard University, 1985. Research Theory and Methodology

Mayes, Clifford T. *Professor*, PhD, University of Utah, 1997. Cultural Foundations; Sociology of Education; Curriculum Theory

Randall, E. Vance *Professor*, PhD, Cornell University, 1989. Educational Administration; Social Philosophy; Education Policy

Richards, A. LeGrand *Associate Professor*, PhD, Brigham Young University, 1982. Philosophy; Foundations

EDUCATIONAL LEADERSHIP AND FOUNDATIONS

Chair: Hallam, Pamela
Associate Chair and Graduate Coordinator: Hite, Julie M.

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<http://education.byu.edu/edlf>

THE PROGRAMS OF STUDY

Our vision is to improve life conditions and opportunities for individuals, families, and communities worldwide.

Our mission is to improve the equity and quality of teaching and learning environments throughout the world. We accomplish this mission through the integration of research, teaching, and service to strengthen educational opportunities for all people worldwide. This integrated mission is threefold:

- Explore and expand the knowledge of educational theory, policy, practice, and leadership.
- Foster the growth of educational leaders of faith and character who possess the requisite knowledge, skills, and dispositions.
- Build the capacity of individuals, families, communities, states, and nations to identify and solve education problems.

The Department of Educational Leadership and Foundations currently offers an EdD. and an MEd. in Educational Leadership. Students may be admitted for graduate study on a part- or full-time basis.

Educational Leadership - EdD

The Ed.D. program in Educational Leadership and Foundations is a part-time program that provides a fresh and powerful learning environment for mid-career in-service educational leaders. The Educational Doctorate Program at Brigham Young University produces

educational leaders with scholarly disposition and skills who genuinely lead, lift, inspire and educate their colleagues and followers. The program will prepare its students to exhibit the disposition and desire to make educational institutions powerful tools for equipping all students, from all backgrounds, for noble lives as contributing members of the human family.

Applicants are only admitted during even-numbered years and begin in Summer term. The deadline for admission is March 1 of the same year. Following admission to the Ed.D. program, Ed.D. candidates will be in a cohort and be expected to work continuously toward completion of all requirements for the degree. Students attend intensive classes for six weekends each semester (including spring and summer terms). During each summer term (including the first summer), students also attend for one full week.

Requirements for Degree

Credit hours: 88 credit hours (with up to 36 hours of credit for completion of an appropriate master's or comparable degree), including 39 hours of coursework, 12 dissertation hours and no required electives.

- **Required courses:** EDLF 645, 646 655, 700, 701, 714, 721, 722, 750, 768, 776, 777, 791R, 799R.
- **Memorandum of understanding.** Students are required to attend all class sessions. Given that the program is designed for students who are also employed full time, students will provide a memorandum of understanding from their employer agreeing to their attendance at the scheduled course sessions, some of which will occur during the normal work week.
- **Program of Study:** To be submitted by the end of the first semester

- **Performance evaluation.** Three times during the academic year, students will be evaluated by the faculty based on their performance and progress in the program.
- **Comprehensive examination.** The completion of the written comprehensive examination lays the foundation for the dissertation prospectus.
- **Dissertation.** In the first summer term, students will be placed with a dissertation chair to help develop and focus their dissertation research. The dissertation will include the preparation of an article that is ready for submission to a peer-reviewed journal.

Requirements for Minimum Registration. Following admission to the Ed.D. program, the University requires that students complete at least 6 semester hours of approved program credit during each academic year (September 1 to August 31).

For a more detailed description of the Ed.D. program requirements, see the EDLF Department's website and online program handbook.

FINANCIAL ASSISTANCE

Research Assistantships. A limited number of research assistantships are available upon application. These assignments involve working with selected faculty members 10 to 20 hours per week. Assistantships are given for one semester but may be extended following a review of student performance.

Scholarships. Scholarships are available on a limited basis. Students receiving assistantships are not normally given tuition scholarships. Tuition aid is given on the basis of need. Applications should be submitted to the department.

RESOURCES AND OPPORTUNITIES

Computer Lab. Computers are available in the McKay School computer lab to provide graduate students access to the several university-licensed software programs, such as SPSS and NVivo to analyze research data. These computers also enable students to search and access materials online and in the Harold B. Lee Library. Ed.D. students will also have access to the library facilities at the University of Utah.

Graduate Student Study Carrels. Graduate student study carrels are available for graduate students who are attending full time and/or working with faculty on research, evaluation, and development projects.

COURSE DESCRIPTION

EDLF

601. Leadership for Learning Communities. (2)

Understanding leadership elements that help schools become high functioning communities of learning.

602. Strategic Leadership for School Improvement. (3)

Theoretical foundations of leadership, organizational theory, strategy, and change. Applying strategic leadership and decision making to effectively align school organizational systems of vision/mission, internal organization, and external environment to facilitate school improvement.

EDUCATIONAL LEADERSHIP AND FOUNDATIONS

610.Human Resource

Administration in Education. (3)

Introduction to human resource management in educational organizations. Emphasizes issues related to working with people, policies, laws, and procedures for sound personnel administration practices, including job analysis, recruitment, selection, professional development, supervision, and performance appraisal.

614.Education of Diverse

Populations. (2)

Multicultural issues in educational theory and practice, with special reference to race, ethnicity, gender, and socioeconomic status.

621.Economics of Education. (3)

Main concepts that apply economic thinking to education. Overview of literature on the efficiency and effectiveness of educational policies on education outcomes.

622.The Law and Education. (3)

Evolution of American law and its application to American educational systems. Fundamental sources and principles of the law, the judicial structure, language policy issues, and key court cases affecting education at the state and federal levels.

627.Instructional Leadership 1: Seminar on Principalship Roles. (3)

Eight principalship roles in creating and maintaining professional learning communities, including principal as learner, culture builder, advocate, leader, mentor, supervisor, manager, and politician. Also includes role conception, socialization, and innovation.
EDLF 601

629.Instructional Leadership 2: Supervisor's Role in Improving Teaching and Learning. (3)

Instructional leadership and school improvement processes in creating and sustaining successful learning communities to improve teaching and learning, including formative instructional supervision, professional development, and action research for school improvement.
EDLF 601 & EDLF 627

631.The Curriculum: Theory and Practice. (3)

Theory and practice of curriculum in its various psychological, social, historical, and philosophical contexts.

635R.Reflective Internship Seminar. (0.5-3)

Reflecting individually and collectively on internship experiences; thinking critically about and relating reflections to school leadership theory and best practices.

645.Quantitative Inquiry 1. (3)

Basic quantitative methods and research concepts; conceptualizing and designing research projects considering measurement and representation processes; understanding basic statistical methods, such as hypothesis tests, confidence intervals, linear regression models, and ANOVA models.

646.Qualitative Inquiry 1. (3)

Methods and design of qualitative research in education.

650.Education Policy. (3)

Introduction to the economic and social benefits of education and the development, implementation, and evaluation of federal, state, and local education policy. Specific education policy issues include governance, resource allocation, accountability, diversity, and curriculum.

655.Social History of American Education. (3)

Interpretative study of major ideas, values, and practices that influenced development of American education within broader social, political, cultural, and economic context.

660.Education and Social Change. (3)

Educational development and a theoretical study of social change. Topics include secularization, industrialization and education, structural differentiation, and the role of the state in social change.

661.Education and International Development. (3)

Fundamentals of international development with exposure to major theorists and development paradigms and to modern-day practice of development by bi-lateral and multilateral aid agencies and non-governmental organizations.

662.Comparative and International Development Education. (3)

Substance and methods of comparative and international development education. How comparisons between systems have implicit in them a theory of comparisons of politics and economics. The role of multilateral aid agencies in influencing the development of schooling.

663.Education, Culture, and Economic Development. (3)

Links between education and various aspects of social and economic development. Topics include human capital formation, the issues of education reform, and rates and return to education in the Third World.

665.Evaluation and Assessment of School Programs. (3)

Nature, purpose, and function of evaluating educational programs.

668.Philosophical Foundations of Western Education. (2)

Major philosophies of education and their influence on educational theory and practice.

672.Research Methods. (3)

Techniques of research in educational settings.
EDLF 640

674. Business Administration and Technology Applications in Education. (2)

Organizing and managing business affairs in educational institutions. Business and instructional applications of technology in education.

676. Data-Driven Decision Making 1: Concepts and Processes. (3)

Identifying problems. Using educational research. Collecting, analyzing, and interpreting data in order to solve problems; to establish fair, collaborative decision-making processes; and to inform continuous school and student improvement.

677. Data-Driven Decision Making 2: Assessing Outcomes at Multiple Levels. (3)

Applying data-driven decision making process to assess outcomes at multiple levels, including student assessment and learning; program and staff evaluation; school performance; community needs and expectations assessment and evaluation.
EDLF 676

688R. Master's Internship. (0.5-6)

Practical experience in state office, local school districts, higher education, and other agencies.

694R. Independent Study. (0.5-3)

Study experience in an area of specialization under direction of a faculty member.
Departmental consent if more than one registration desired.

695R. Independent Research. (0.5-3)

Individual research study or project under the direction of a faculty member.
Instructor's consent; departmental consent if more than one registration desired.

698R. Master's Project. (0.5-6)

Departmental consent.

699R. Master's Thesis. (0.5-6)

Committee chair's consent.

700. Strategic and Organizational Leadership. (3)

Theory and practice of leadership, organizational behavior, organization theory and strategy in education contexts, emphasizing theory application.

701. Collaborative Leadership for Change. (3)

Collaborative leadership theories and practices leading to meaningful change in educational organizations and institutions at the micro through macro levels.

714. Multicultural Education. (3)

Multicultural issues in educational theory and practice, with special reference to race, ethnicity, gender, socioeconomic status, and various types of exceptionality.

721. Economics of Education. (3)

Main concepts that apply economic thinking to education. Overview of literature on the efficiency and effectiveness of educational policies and practices on education outcomes.

722. Constitutional Law and Education. (3)

Impact of Constitution on education in America; cases under constitutional law that have influenced policy and practice in the educational system.

729. Instructional Leadership and Learning Communities. (3)

Leading and improving successful teaching and learning through applying theory and practice of instructional leadership in learning communities.

750. Education Policy and Politics. (3)

Educational policy at the state and national levels emphasizing political theory, normative and empirical dimensions, and political factors that shape the policy process, legislation, and practice.

768. Philosophy and History of Western Education. (3)

Major philosophies of education and their influence on western educational theory and practice.

776. Quantitative Inquiry 2. (3)

Applying quantitative methods to evaluation within education; using conceptual frameworks to form research questions and hypotheses, studying the logic and flow of the evaluation process, planning evaluation studies, accessing and analyzing data, reporting results.
EDLF 645

777. Qualitative Inquiry 2. (3)

Analyzing and interpreting qualitative research in education.
EDLF 646

788R. Doctoral Internship. (1-6)

Practical experience in the state office, local school districts, higher education settings, or other agencies.

791R. Doctoral Seminar. (0.5-6)

Departmental consent.

795R. Research and Reporting Techniques for Doctoral Dissertation. (1-3)

Research designs and reporting techniques for planning, conducting, and reporting research for doctoral dissertation.

799R. Dissertation. (0.5-18)

FACULTY

Baum, Donald R. *Assistant Professor*, PhD, University of Michigan, 2013. International Educational Policy

Boren, David M. *Assistant Clinical Professor*, PhD, Brigham Young University, 2010. Educational Administration

Ferrin, Scott E. *Professor*, EdD, Harvard University, 1996. School Law; Policy; Politics; Language Policy

Geo-JaJa, MacLeans A. *Professor*, PhD, University of Utah, 1986. International Development Education; Global Economic Restructuring; Human Development in Africa; Economics of Education

Hallam, Pamela *Associate Professor*, PhD, University of Utah, 2006. Instructional Leadership; Human Resources; Educational Administration

Hilton, Sterling C. *Associate Professor*, PhD, Johns Hopkins University, 1996. Longitudinal Data Analysis; Structural Equation Modeling; Statistics Education

Hite, Julie M. *Professor*, PhD, University of Utah, 1999. Leadership; Organizational Behavior; Organizational Theory; Strategy; Social Networks in Educational Organizations

Hite, Steven J. *Professor*, EdD, Harvard University, 1985. Research Theory and Methodology

Mayes, Clifford T. *Professor*, PhD, University of Utah, 1997. Cultural Foundations; Sociology of Education; Curriculum Theory

Randall, E. Vance *Professor*, PhD, Cornell University, 1989. Educational Administration; Social Philosophy; Education Policy

Richards, A. LeGrand *Associate Professor*, PhD, Brigham Young University, 1982. Philosophy; Foundations

ELECTRICAL AND COMPUTER ENGINEERING

Chair: Nelson, Brent

Graduate Coordinator: Jeffs, Brian D.

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<http://www.ee.byu.edu>

THE PROGRAMS OF STUDY

Electrical engineering has its origins in the study and application of electrical phenomena. However, in recent years the field has grown to embrace a diverse range of problems in applied physics and mathematics. The department currently offers advanced study in four broad areas.

- Computer Engineering concentrates on the architecture and implementation of digital logic and computing systems.
- Electromagnetics explores the theory, physical properties, and applications of electromagnetic radiation and includes emphases in optics, remote sensing, numerical computation, and microwave systems.
- Microelectronics and VLSI focuses on the design and fabrication of micro-electronic circuits for digital and analog applications, including device physics, modeling, processing, and fabrication.
- Signals and Systems studies fundamental and applied issues in information processing and includes emphases in communication theory, linear and nonlinear control systems, digital signal processing, and estimation theory.

Specific research activities in these broad areas are described on the department graduate program Web page at <http://www.ee.byu.edu/grad/resources>

Two degrees are offered through the department: Electrical and Computer Engineering-MS and Electrical and Computer Engineering-PhD.

Electrical and Computer Engineering - MS

The MS degree concentrates on establishing a sound theoretical foundation and on exposing students to advanced developments. The critical thinking and high level of mathematical and algorithmic facility required by the abstract nature of graduate courses allows the MS graduate to assume responsibility and supervision beyond that normally given a BS engineer. MS students study in one of the four broad areas while pursuing either the thesis or course work option. The MS degree typically takes two years to complete.

The preferred MS degree option within the department is the thesis option. Students pursuing the thesis degree work closely with a faculty adviser and develop the research and design tools necessary to participate in the leading edge developments in the discipline. Students applying for the thesis degree option should indicate their research interests and preferred faculty advisor within the application.

The department also offers a MS course work degree which is only an option for students with extenuating circumstances. Students are not generally admitted into the course work option.

Requirements for Degree

(Thesis Option)

Credit hours: 32.

- Required courses: 24 credit hours of graduate course work as specified by the advisory committee; 2 credit hours of Professional Writing EC En 692; 6 credit hours of thesis EC En 699R.
- Study list: submitted during first semester of graduate study.
- Thesis.
- Final oral examination consisting of public presentation of original research described in thesis.

Requirements for Degree

(Course Work Option)

- Credit hours: 32
- Required courses: 30 credit hours of graduate course work as specified by the advisory committee; 2 credit hours of Professional Writing EC En 692.
- Study list: submitted during first semester of graduate study.

FINANCIAL ASSISTANCE

The department provides several types of financial assistance for graduate students. All applicants in good standing are considered for financial aid, but priority is given to PhD students. More information may be obtained from the department. No special application form is required. The following types of assistance are available:

Tuition Scholarships. The department offers a limited number of full- and partial-tuition scholarships. All students applying to the program are automatically considered for tuition scholarships.

Research Assistantships. Full-time graduate students in good standing may be awarded research assistantships to assist faculty with externally funded research. Contact individual faculty directly to identify research assistantship opportunities.

Teaching Assistantships. The department employs graduate students as teaching assistants in undergraduate and graduate courses. The department also employs students in a number of department support positions such as computer system administration and laboratory support. Applications for teaching assistant and department student positions are accepted the week prior to the given semester or term. Contact the department for more information about current teaching assistant and department support opportunities.

RESOURCES AND OPPORTUNITIES

The department maintains a variety of facilities to support the diverse research efforts of the graduate faculty. Facilities include:

- Extensive PC and Unix workstation computer resources.
- Digital signal processing laboratory that includes a variety of software tools, image display and digitizing equipment, and audio processing equipment.
- Well-equipped clean-room to support research in semiconductor and electro-optic fabrication.
- Microwave remote sensing and integrated systems laboratories.
- Electro-optics laboratory that includes lasers and fiber optic research equipment.
- Antenna range.
- Reconfigurable logic laboratory.
- Telemetry laboratory to support research in digital communications and error control coding.
- Laboratory to support research in cooperative and autonomous systems.
- Facilities for medical imaging research.
- Laboratories to support research on chemical and biological systems.

For a description of current research activities associated with each facility, see the department graduate program Web page at <http://www.ee.byu.edu/grad/resources>

COURSE DESCRIPTION**EC EN****521.Introduction to Algorithm Design. (3)**

Algorithm analysis, data structures, sorting and searching, graph traversal, weighted graph algorithms, combinational search and heuristic methods, dynamic programming, approximation algorithms, designing algorithms. C S 235 and 236 and EC En 324; or equivalents.

522R.Special Topics in Computer Systems. (0.5-3)

Instructor's consent.

523.Computer System Reliability. (3)

Analysis, modeling, and design of reliable, fault-tolerant computing systems.
EC En 320, 324, 370.

528.Computer Architecture. (3)

Architectural analysis and design of computer systems: instruction-level parallelism, memory hierarchy, instruction sets, low-power architecture.
EC En 424 or equivalent.

541.Active and Passive Filter Design. (3)

Design methods for electronic filters based on passive components, active components, and integrated circuit components.
ECEn 340, 380; or equivalents.

542R.Special Topics in Electronics. (0.5-3)

Instructor's consent.

543.CMOS Amplifier Design. (3)

Factors affecting performance of MOS devices in analog applications. Design of MOS amplifiers, buffers, and comparators.
ECEn 443 or 445 or equivalent.

548. Analog CMOS Circuit Design. (3)

Design of CMOS comparators, wideband amplifiers, bandgap references; multipliers, PTAT generators, charge-transfer amplifiers, chopper-stabilized amplifiers, and advanced D/A and A/D CMOS architectures. ECEn 443 or 445 or equivalent.

549. VLSI Communication Circuit Design. (3)

Frequency synthesizers; low-jitter, voltage-controlled oscillators; high Q circuits; clock regeneration; phase-locked loops; frequency discriminators; and radio-on-a-chip concepts. ECEn 443 or 445 or equivalent.

550. (EC En-Me En) Microelectromechanical Systems (MEMS). (3)

Design, fabrication, and applications of MEMS. Mechanical properties governing their design and reliability and the processing technologies used to fabricate them. EC En 450 or Me En 372 or equivalent.

555. Optoelectronic Devices. (3)

Design, operation, and fabrication of modern optoelectronic devices, including photodiodes, photovoltaics, LEDs, and lasers. ECEn 450 or equivalent or instructor's consent.

560. Electromagnetic Wave Theory. (3)

Principles and methods of modern electromagnetic wave theory: anisotropic media, dyadic green functions, Huygen's principle, contour integration methods, asymptotic integration. Applications in radiation and scattering. EC En 462 or equivalent.

562. Optical Communication Components and Systems. (3)

Fiber-optic communication system components and their operating and performance characteristics. EC En 462, 466; or equivalents.

563. Applied Computational Electromagnetics. (3)

Current theory and practice in numerically solving Maxwell's equations for antenna and circuit design and radar-scattering prediction. EC En 462 or equivalent.

564. Radar and Communication Systems. (3)

Design and performance of radar and communication systems: radar equation ambiguity functions, modulation, signal detection, link budgets, spread spectrum, system design, and performance trade-offs. EC En 464 or 485; EC En 360 or 462; or instructor's consent.

568. Microwave Remote Sensing. (3)

Emphasis on space-borne remote sensing of the earth's atmosphere, land, and oceans. Primary methods and applications for both active (radar) and passive (radiometry). Instructor's consent.

576. Medical Imaging and Image Reconstruction. (3)

Fundamentals of medical imaging modalities (x-ray, CT, ultrasound, and MRI) from a signals and systems perspective, magnetic resonance physics, medical image reconstruction methods (backprojection, partial-Fourier techniques, parallel imaging, compressed sensing). EC EN 360 & EC EN 370 & EC EN 380

620. Advanced Digital Systems. (3)

Advanced synchronous systems design; CAD and HDLs; systolic arrays; high-speed, low-power digital circuit architectures. EC En 320 or proficiency in HDL digital system design.

621. Computer Arithmetic. (3)

Fundamental principles and development of algorithms for performing arithmetic on digital computers and application-specific processors.

625. Compilation Strategies for High-Performance Systems. (3)

Compilation and synthesis strategies for high-performance hardware/software systems. EC En 320 and 521.

627. Advanced Embedded Systems. (3)

Topics include embedded system architecture and organization, hardware-software codesign, hardware-software partitioning, co-verification, system-on-a-chip, and real-time systems. ECEn 425 or 427 or equivalent.

629. Reconfigurable Computing Systems. (3)

Introduction to FPGA devices, lab experience developing FPGA-based configurable systems. EC En 521; EC En 320 (or proficiency in HDL digital system design).

631. Robotic Vision. (3)

Deriving 3-D geometry and motion from image sequence or multiple digital images: camera modeling, image processing techniques, and geometry models of single and multiple-view systems. ECEn 380, Math 313 (or equivalents); proficiency in Matlab or C++.

648. Advanced Mixed-Signal Circuit Design. (3)

New converter architectures, advanced measurement and characterization techniques, low-noise timing circuits, VLSI layout and package considerations, bond wire inductance, and wireless applications. EC En 548.

654. VLSI Systems Design. (3)

Design of structured circuit systems for very large-scale integrated semiconductor chips. Architecture of digital VLSI systems. EC En 451 or equivalent.

661.Advanced Optical Engineering. (3)

Theory and analysis of optical systems, including beam propagation, image formation, and modern optical systems. ECEn 462 or equivalent.

662R.Special Topics in Electromagnetics. (0.5-3)

Graduate standing or instructor's consent.

665.Antennas and Propagation for Wireless Communication. (3)

Antenna analysis, array theory, and propagation channel models with application to wireless communication systems. EC En 380, 462; or equivalents.

670.Stochastic Processes. (3)

Review of elementary probability, introduction to random processes: definitions, properties, covariance, spectral density, time average, stationarity, ergodicity, linear system relations, mean square estimation, Markov processes. EC En 370 and 380 or equivalents; graduate standing or instructor's consent.

671.Mathematics of Signals and Systems. (3)

Introduction to mathematics of signal processing, communication, and control theory; linear spaces, Eigenvalue and singular-value decompositions, quadratic forms, linear operators, adjoints, dual spaces. ECEn 380, Math 313 (or equivalents); graduate standing or instructor's consent.

672.Detection and Estimation Theory. (3)

Sufficiency, completeness; Neyman-Pearson and Bayes detector; maximum likelihood, Bayes, minimum mean square, and linear estimation; Kalman filters; selected topics. EC En 370 or equivalent; EC En 670; graduate standing or instructor's consent.

673.(EC En-Me En 633) Digital Control Systems. (3)

Design of digital controllers for dynamical systems, analysis using the z-transform, digital filter implementation, application of transform-based classical design methods, and modern state-space techniques. EC En 483 or Me En 431 or equivalent.

674.(EC En-Me En 634) Flight Dynamics and Control. (3)

Dynamics of flight, stability, and control derivatives, longitudinal and lateral control design, state-space control strategies for aircraft; and unmanned air vehicle applications. EC En 483 or Me En 431 or equivalent.

678.Digital Image Processing. (3)

Digital processing theory and techniques for two-dimensional image analysis, enhancement, restoration, data compression, and reconstruction from projections. EC En 487 or equivalent; graduate standing or instructor's consent.

682R.Special Topics in Signals and Systems. (0.5-3)

Graduate standing or instructor's consent.

689R.Advanced Topics in Signals and Systems. (3)

Subjects that may be offered include: information theory, optimal estimation theory, system identification, advanced image processing, pattern recognition

692.Professional Writing for Electrical and Computer Engineers. (2)

Advanced writing concepts. Organizing, writing, and publishing scholarly research.

699R.Master's Thesis. (0.5-9)

Graduate standing and major professor's consent.

770.Information Theory. (3)

Mathematical development of information theory applied to data communications and coding. Topics include entropy, mutual information, channel capacity, data compression, rate distortion theory, etc. EC En 370 or equivalent.

773.(EC En-Me En 733) Linear System Theory. (3)

Mathematical introduction to time-varying linear systems; state space descriptions, controllability, observability, Lyapunov stability, observer-based control. Design of linear quadratic regulators and infinite-horizon Kalman filters. EC En 483 or Me En 431 or equivalent; EC En 671.

774.(EC En-Me En734) Nonlinear System Theory. (3)

Mathematical introduction to nonlinear dynamic systems. Topics include Lyapunov methods, passivity, input-output stability, and nonlinear feedback design. EC En 483 or Me En 431 or equivalent; EC En 671.

775.Error-Control Coding. (3)

Theory and implementation of block and convolutional codes for error control in digital communication systems. Iterative detection of low-density parity-check codes and turbo codes. Graduate standing or instructor's consent.

776.Advanced Digital and Wireless Communications. (3)

Linear and nonlinear M-ary modulation and detection, system performance in AWGN and multipath fading environments, equalization, synchronization, spread spectrum. EC En 485 or equivalent; EC En 670.

ELECTRICAL AND COMPUTER ENGINEERING

777.Digital Signal Processing. (3)

Advanced theory and applications including optimal statistical processing, adaptive processing, and array processing methods.

EC En 487 or equivalent; EC En 670, 671; graduate standing or instructor's consent.

799R.Doctoral Dissertation. (0.5-9)

FACULTY

Archibald, James K. *Professor*, PhD, University of Washington, 1987. Multi-agent Systems; Computer Vision; Real-time Systems

Bangerter, Neal K. *Associate Professor*, PhD, Stanford University, 2004. Biomedical Imaging; Magnetic Resonance Physics and Devices; Digital Image Processing

Beard, Randal W. *Professor*, PhD, Rensselaer Polytechnic Institute, 1995. Guidance and Control of Micro Air Vehicles; Cooperative Control; Nonlinear Control Theory

Chiang, Shiuhhua *Assistant Professor*,

Comer, David J. *Professor*, PhD, Washington State University, 1966. Electronics; Circuit Theory; Analog Integrated Circuits

Hawkins, Aaron R. *Professor*, PhD, University of California, Santa Barbara, 1998. Solid-State Device Physics; Semiconductor Processing; Optoelectronics and Photonics; Materials Integration

Hutchings, Brad L. *Professor*, PhD, University of Utah, 1992. Reconfigurable Logic; FPGA's VLSI Design

Jeffs, Brian D. *Professor*, PhD, University of Southern California, 1989. Signal Processing; Radio Astronomy

Jensen, Michael A. *Professor*, PhD, University of California, Los Angeles, 1994. Wireless Communications; High-Frequency Circuits; Antennas and Propagation

Lee, D. J. *Professor*, PhD, Texas Tech University, 1990. Medical Imaging and Informatics, Machine Vision Applications, and Real-Time Robot Vision

Long, David G. *Professor*, PhD, University of Southern California, 1989. Microwave Remote Sensing; Estimation Theory; Radar

Mazzeo, Brian A. *Assistant Professor*, PhD, University of Cambridge, 2008. Semiconductor Modeling; Biosensors; Dielectric Spectroscopy

Nelson, Brent E. *Professor*, PhD, University of Utah, 1984. Digital Systems Design and CAD Tools, FPGA's and FPGA-based configurable computing, VLSI design and CAD tools

Nordin, Gregory P. *Professor*, PhD, University of Southern California, 1992. Photonics; Sensors; Nano-Structures

Penry, David A. *Associate Professor*, PhD, Princeton University, 2006. Computer Architecture; Microarchitecture; Simulation; VLSI Design

Rice, Michael *Professor*, PhD, Georgia Institute of Technology, 1991. Digital Communication Theory; Error-Control Coding; Software Radios

Schultz, Stephen M. *Professor*, PhD, Georgia Institute of Technology, 1999. Fiber Optics; Integrated Optics; Diffractive Optics

Selfridge, Richard H. *Professor*, PhD, University of California, Davis, 1984. Fiber and Integrated Optics; Electromagnetics; Lasers

Smalley, Daniel Elijah *Assistant Professor*

Stirling, Wynn C. *Professor*, PhD, Stanford University, 1983. Linear System Theory; Estimation and Detection Theory; Control Theory

Warnick, Karl *Professor*, PhD, Brigham Young University, 1997. Microwave Systems; Antenna Design; Electromagnetic Theory; Numerical Methods

Wilde, Doran *Associate Professor*, PhD, Oregon State University, 1995. Regular Array Architectures, Computer Arithmetic, Autonomous Vehicles

Wirthlin, Michael J. *Professor*, PhD, Brigham Young University, 1997. Reconfigurable Computing; Fault-Tolerant FPGA Processing; High-Level Synthesis and Compilation

ENGLISH

Chair: Snyder, Phillip A.

Graduate Coordinator: Cutler, Ed

4198 JFSB, Provo, UT 84602-6701

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THE PROGRAMS OF STUDY

The English Department, as a part of the College of Humanities, offers graduate study devoted to the development of reading, writing, and thinking abilities derived from studying and producing literary and other texts in English. Students study these works in aesthetic, historical, religious, and other contexts, including the theoretical contexts the faculty members bring to the courses they teach. This program makes intensive use of the library and its resources.

The MA in English program enables students to develop knowledge, skills, and attitudes that have application in contemporary society and that are in harmony with the principles of the restored gospel of Jesus Christ. The program may appeal to students who plan to enter such careers as teaching, editing, and writing; to those who seek an advanced liberal arts degree for preparation in library science or public service; to those who plan to go on for a doctorate in English or a related area; and to those who wish to continue studies for personal satisfaction.

The MFA in Creative Writing likewise prepares students as scholars and creative writers for careers in teaching and writing. While the MFA in Creative Writing is widely considered a terminal degree, it can also qualify students interested in additional training for a Ph.D. in Creative Writing.

Each year, around 30 students are admitted to graduate study in our department, with approximately 20 students entering our MA in English program and approximately 10 entering our MFA in Creative Writing program. The average duration for both degree programs is two years.

English - MA

Credit hours: 32 minimum, consisting of 26 course work hours plus 6 thesis hours (Engl 699R)

- Introductory course (2 hours): Engl 600
- Required courses (15 hours): Three graduate-level writing workshops Engl 617R, two literature courses.
- Elective courses (6 hours): Two graduate-level courses in the English Department (up to three credit hours may be taken outside the English Department with advisor approval)
- Thesis (6 hours): six thesis hours (Engl 699R)
- Oral examination of thesis, coursework, and reading list

FINANCIAL ASSISTANCE

Financial assistance is available for this program through the English Department and other agencies in the university. The English Department offers tuition awards for all first- and second-year students.

Admitted students are encouraged to apply for instructorships, teaching and research assistantships, editing internships, and other awards that are provided as a financial and learning resource. The university handles federal student loans.

RESOURCES AND OPPORTUNITIES

The Department of English utilizes the

Office of Digital Humanities. This center is especially active in the production of teaching and research materials, particularly those that are computer related.

The Office for the Study of Christian Values in Literature was established in 1980 to affirm the importance of religious and moral values in the creation and study of imaginative literature. It provides both a focus for activity and an encouragement to teachers, writers, scholars, and readers who believe in a value-centered literary tradition.

The Writing Center is available to assist students and faculty in improving their writing skills. Graduate students benefit particularly from critical evaluations of drafts of seminar papers and theses, and those with advanced writing skills may serve as interns in the center.

Faculty research interests are included in the faculty section following the course descriptions.

For a more detailed description of the graduate program requirements, send for a copy of the department's bulletin.

COURSE DESCRIPTION

ENGL

516. Advanced Technical Writing. (3)

Advanced concepts, including literature of technical writing, liaison with technical staff, communication networks, rhetoric of graphics, and teaching and freelancing technical writing.

Engl 316 or instructor's consent.

ENGLISH

520R.Studies in Theme and Form. (0.5-3)

Topics vary: literature and film, myth and archetype, science fiction, etc.

590RDirected Readings. (1-3)

Individual readings beyond what is offered in the curriculum. Graduate advisory committee approval.

599R.Academic Internship. (0.5-9)

On-the-job training. Department chair's consent.

600.Introduction to Graduate Studies. (2)

Trends in postgraduate curricula, ideology, pedagogy, and professional publication in language and literature.

610.Composition Pedagogy. (3)

Practicum for graduate students teaching First-Year Writing courses. Composition program approval.

611R.Studies in Teaching Advanced Composition. (3)

Practicum for graduate students training to teach advanced composition courses. Composition program approval.

612R.History of Rhetoric. (3)

Major texts, thinkers, and movements of the Western rhetorical tradition from classical antiquity to the present.

613R.Rhetorical Theory and Criticism. (3)

Interpreting and evaluating rhetorical acts and artifacts, including literature, for the purpose of understanding rhetorical theory and practice.

614R.Special Topics in Rhetoric and Composition. (3)

Various approaches to rhetoric and composition.

615R.Special Topics in Technical and Professional Communication. (3)

Various approaches to technical and professional communication.

616R.Research in Rhetoric and Composition. (3)

Research methods in rhetoric and composition; evaluation of assumptions, strengths, and limitations of each method; identification of student research topics.

617R.Creative Writing Theory. (3)

Theories and techniques of creative writers, primarily in fiction, poetry, and creative nonfiction.

620R.Seminar in British Literature before 1660. (3)

Texts, trends, and writers from the medieval and early modern periods.

621R.Seminar in British Literature 1660-1830. (3)

Texts, trends, and writers from the Restoration, the eighteenth century, and the Romantic period.

622R.Seminar in British Literature 1830-Present. (3)

Texts, trends, and writers from the Victorian, modern, and postmodern periods.

623R.Seminar in the Novel. (3)

Various approaches to the novel.

624R.Seminar in Drama. (3)

Various approaches to drama.

626R.Seminar in American Literature before 1865. (3)

Texts, trends, and writers from the colonial, Revolutionary, early national, and Romantic periods.

627R.Seminar in American Literature 1865-1914. (3)

Texts, trends, and writers from the realistic and naturalistic periods.

628R.Seminar in American Literature 1914-Present. (3)

Texts, trends, and writers from the modern and postmodern eras.

629R.Seminar in Transnational Literature. (3)

Texts, trends, and writers from a variety of national and ethnic literary traditions.

630R.Theoretical Discourse. (3)

Major texts, issues, and debates from the history of literary theory. Engl 451 or 452 or equivalent.

640R.Studies in Folklore. (3)

Directed study of folklore and folkways. Engl 391 or instructor's consent.

667R.Creative Nonfiction Workshop. (3)

Writing creative nonfiction. Individual consideration of manuscripts. Engl 317R or 318R; Engl 419R; or instructor's consent.

668R.Fiction Workshop. (3)

Writing fiction. Individual consideration of manuscripts. Engl 318R or 319R; Engl 419R; or instructor's consent

669R.Poetry Workshop. (3)

Writing poetry. Individual consideration of manuscripts. Engl 319R, 419R; or instructor's consent.

670R.Youth Adult Novel Workshop. (3)

Writing for young adult readers. Individual consideration of manuscripts. Engl 320R, 419R; or instructor's consent.

699R.Master's Thesis. (0.5-18)

FACULTY

Balzotti, Jonathan M. *Assistant Professor*

Bennion, John S. *Associate Professor*, PhD, University of Houston, 1989. Creative Writing; British Novel; Mormon Literature

- Boswell, Grant M.** *Associate Professor*, PhD, University of Southern California, 1985. Rhetorical Theory and History; Composition Theory
- Burton, Gideon O.** *Assistant Professor*, PhD, University of Southern California, 1994. History of Rhetoric; Renaissance Literature; Mormon Criticism and Literature
- Christiansen, Nancy L.** *Associate Professor*, PhD, University of California, Los Angeles, 1994. History and Theory of Rhetoric; Sixteenth-Century English Literature
- Christianson, Frank** *Associate Professor*, PhD, Brown University, 2004. Twentieth-Century American and Trans-Atlantic Literature
- Clark, Gregory D.** *Professor*, PhD, Rensselaer Polytechnic Institute, 1985. Rhetorical Theory and Criticism; Early American Literature
- Coombs, Dawan Lynn** *Assistant Professor*, PhD, University of Georgia, 2012. Reading Pedagogy, English Education
- Crisler, Jesse S.** *Professor*, PhD, University of South Carolina, 1973. Nineteenth-Century American Literature; Naturalism; Adolescent Literature
- Crowe, Christopher E.** *Professor*, EdD, Arizona State University, 1986. English Education; Adolescent Literature
- Cutchins, Dennis R.** *Associate Professor*, PhD, Florida State University, 1997. American Literature; Folklore
- Cutler, Edward S.** *Associate Professor*, PhD, University of California, San Diego, 1997. Nineteenth-Century American Literature
- Dean, Deborah M.** *Professor*, PhD, Seattle Pacific University, 1999. English Education; Writing Pedagogy
- Duerden, Richard Y.** *Associate Professor*, PhD, University of Chicago, 1989. Sixteenth- and Seventeenth-Century English Literature; Literary Theory
- Eastley, Aaron** *Associate Professor*, PhD, University of California, San Diego, 2003. Twentieth-Century and Postcolonial British Literature
- Eliason, Eric A.** *Professor*, PhD, University of Texas, Austin, 1998. Folklore
- Esplin, Emron** *Assistant Professor*, PhD, Michigan State University, 2008. 19th and 20th Century American Literature; 20th Century Latin American Literature
- Eyring, Mary** *Assistant Professor*, PhD, University of California, San Diego, 2012. Early American Literature; American Women's Writing and Cultural Productions of the 19th Century; Transatlantic Literature and Print Culture; Disability Studies
- Franklin, Joseph C.** *Assistant Professor*, PhD, Texas Tech University, 2012. Creative Writing and 20th Century American Regionalism
- Grierson, Sirpa T.** *Associate Professor*, PhD, University of Southern Mississippi, 1996. English Education; Reading and Educational Research
- Hall, William** *Assistant Professor*, PhD, University of California at Santa Barbara, 2010. 18th Century Poetry, Digital Humanities
- Hansen, Kristine** *Professor*, PhD, University of Texas, Austin, 1987. Rhetoric; Composition Theory
- Hickman, Trenton L.** *Associate Professor*, PhD, State University of New York, Stony Brook, 2000. Twentieth-Century American Literature; Latino Literature; Anglophone Caribbean Literature
- Horrocks, Jamie** *Assistant Professor*, PhD, Indiana University, 2010. Womens Studies, Victorian-Modernist Era British Literature
- Jackson, Brian D.** *Associate Professor*, PhD, University of Arizona, 2007. Rhetoric; Composition; Teaching of English
- Johnson, Kim** *Professor*, PhD, University of California, Berkeley, 2003. Poetry; Renaissance Literature
- Kerr, Jason** *Assistant Professor*, PhD, Boston College, 2011. British Renaissance, Milton, Bible Studies
- Larsen, Lance E.** *Professor*, PhD, University of Houston, 1993. Creative Writing; American Literature; Contemporary Poetry
- Lavers, Michael** *Assistant Professor*, PhD, University of Utah, 2015. Poetry
- Lawrence, A. Keith** *Associate Professor*, PhD, University of Southern California, 1987. Early American Literature; Asian-American Literature
- Leman, Peter D.** *Assistant Professor*, PhD, UC Irvine, 2011. African Literature, Post-Colonial Literature, Law and Literature
- Madden, Patrick** *Associate Professor*, PhD, Ohio University, 2004. Creative Writing; Nonfiction
- Mason, Nicholas A.** *Professor*, PhD, State University of New York at Stony Brook, 1999. Eighteenth- and Nineteenth-Century British Literature
- Matthews, Kristin** *Associate Professor*, PhD, University of Wisconsin, Madison, 2004. Contemporary American and Cold War Literature
- McInelly, Brett C.** *Professor*, PhD, University of Cincinnati, 2000. British Novel; Postcolonial Theory; Composition Studies
- Muhlestein, Daniel K.** *Assistant Professor*, PhD, Rice University, 1992. Literary Theory; English Romantic Literature
- Ostenson, Jonathan** *Assistant Professor*, PhD, University of Utah, 2010. English Education

EXERCISE SCIENCES

Paul, Danette *Associate Professor*, PhD, Pennsylvania State University, 1996. Rhetoric and Composition; Rhetoric of Science

Perry, Dennis R. *Associate Professor*, PhD, University of Wisconsin, Madison, 1986. Early American Literature; Cinema Studies; Poe Studies

Petersen, Zina N. *Associate Professor*, PhD, Catholic University, 1997. Medieval English Studies; Women's Devotional Literature

Roberts, Brian R. *Assistant Professor*, PhD, University of Virginia, 2008. African American Literature, Late Nineteenth-Century American Literature, American Studies

Rowan, Jamin *Assistant Professor*, PhD, Boston College, 2008. Urban Studies, Late Nineteenth and Twentieth-Century American Literature

Rudy, Jill T. *Associate Professor*, PhD, Indiana University, 1997. Folklore

Siegfried, Brandie R. *Associate Professor*, PhD, Brandeis University, 1993. Sixteenth- and Seventeenth-Century English Literature; Women's Studies; Literary Theory

Snyder, Phillip A. *Associate Professor*, PhD, University of North Carolina, Chapel Hill, 1988. Twentieth-Century British and American Literature; Autobiography

Stock, David *Assistant Professor*, PhD, University of Wisconsin-Madison, 2012. Rhetoric and Writing Studies, Writing Centers/Writing Across the Curriculum, Histories and Pedagogies of Rhetoric

Talbot, John C. *Associate Professor*, PhD, Boston University, 2001. Classics; English Poetry

Thorne-Murphy, Leslee *Associate Professor*, PhD, Brandeis University, 2001. Victorian Literature and Women's Studies

Thursby, Jacqueline *Professor*, PhD, Bowling Green State University, 1994. English Education; Folklore

Tuttle, Stephen B. *Associate Professor*, PhD, University of Utah, 2006. Creative Writing

Watts, Jarica *Assistant Professor*, PhD, University of Utah, 2011. Early 20th Century British Literature, British Modernism

Westover, Paul *Assistant Professor*, PhD, Indiana University, 2008. British Romanticism

Wickman, Matthew F. *Associate Professor*, PhD, University of California, Los Angeles, 2000. Eighteenth-Century British Literature; Literary Theory

Wilcox, Miranda *Assistant Professor*, PhD, Notre Dame University, 2006. Medieval Literature

Young, Bruce Wilson *Associate Professor*

EXERCISE SCIENCES

Department Chair: Mack, Gary W.
Graduate Coordinator: Myrer, J. William

106 SFH, Provo, UT 84602-2216
(801) 422-2670
maggie_shibla@byu.edu
<http://exercisesciences.byu.edu/>

THE PROGRAMS OF STUDY

The Department of Exercise Sciences values the human being as sacred and seeks to strengthen both body and spirit by attaining, advancing, and disseminating knowledge in the disciplines of human exercise and performance, injury and rehabilitation, and wellness while inviting divine inspiration to guide our efforts.

Graduate programs within the Department of Exercise Sciences are designed to provide an atmosphere where increased knowledge and practice prepare students to become leaders in their professions, families, communities, and the world. Instruction takes the form of lectures and laboratory courses, seminars, examinations, independent study, research, and teaching experiences.

The Department of Exercise Sciences has the following graduate program objectives:

- To develop scholars, researchers, teachers, and professionals in exercise science who can make significant original contributions to the discipline's body of knowledge and integrate, apply, and disseminate the frontiers of exercise science knowledge.

The following degrees are offered through the Department of Exercise Sciences: Exercise Sciences-MS (thesis required); and Exercise Sciences-PhD.

The Department of Exercise Sciences houses the Human Performance Research Center (HPRC). The primary purpose of the HPRC is to support applied and basic research programs of faculty and graduate students on such topics as nutrition and exercise, drugs and exercise, exercise and cardiovascular disease, exercise and weight control, therapeutic modalities and rehabilitation procedures, biomechanics, and other contemporary issues in exercise science.

Exercise Sciences - PhD

This program prepares students for leadership at the highest level of their profession. Most students become university or college faculty. Students are prepared in the scientific bases of exercise science, well acquainted with the scientific literature, able to teach college courses, and able to do independent research.

Requirements for Degree

60 hours beyond the bachelor's degree with a minimum of 36 credit hours residence requirement beyond master's degree.

- Comprehensive Exam (written and oral) and Dissertation required.
- Minimum of 60 hours beyond bachelor's degree in addition to all prerequisites. No 100 through 400 level classes apply. All doctoral students are expected to be engaged in a continual program of research during their studies, either original or collaborative, and to present at a regional, national, or international conference or submit a manuscript to a refereed journal. This is in addition to the thesis (or manuscript described above in lieu of a thesis) and dissertation.
- PhD students are also required to gain teaching experience by teaching or team-teaching appropriate courses in the undergraduate curriculum.

- Areas of specialization: the three areas have the following in common. The core and specialization must be taken at BYU:
- Research Core (27-31 Hours): ExSc 691, 693R, 751, 753, 797R (4 hours), 799R (18 hours).

Exercise Physiology

- Required courses (16 Hours): ExSc 666, 667, 669, 766, 769, PDBio 565.
- Supporting areas: minimum 17 hours of graduate credit, plus prerequisites, must be included in supporting areas approved by your dissertation committee. Suggested areas include: physiology and developmental biology, biology, health/wellness, nutrition, biomechanics.

Health Promotion

- Required: (16 Hours from the following): ExSc 661, 666, 667, 669, 671, 673.
- Supporting areas: minimum 17 hours of graduate credit, plus prerequisites, must be included in supporting areas approved by your dissertation committee. Suggested areas include: biomechanics/advanced exercise physiology, health, nutrition, statistics, teacher and program evaluation.

Physical Medicine and Rehabilitation

- Required courses (18 Hours): ExSc 560, 625R (12 hours), 668.

Supporting areas: minimum 15 hours of graduate credit, plus prerequisites, must be included in supporting areas approved by your dissertation committee. Suggested areas include: muscle function, pedagogy, physiology and developmental biology, chemistry/biochemistry, microbiology & molecular biology, nutrition, health/wellness.

For All Specializations

- No more than 9 hours of supporting area course work may be transferred from another university. One member of each student's committee must be from outside the college.
- PhD students must register for at least two consecutive 6-hour semesters on the BYU Provo campus.
- Dissertation.
- Examinations: (A) comprehensive examination (written and oral); (B) oral defense of dissertation.

FINANCIAL ASSISTANCE

Exercise Science provides six to eight stipends per year (100% tuition waiver and employment support of 20-28 hours per week for Fall and Winter semesters) for doctoral students. Some teaching and research assistantships are available for qualified MS students. These assistantships are awarded according to faculty and department needs.

RESOURCES AND OPPORTUNITIES

Other resources exist in these areas:

Anatomy & Biomechanics: six cadavers and skeletons. Biomechanics: three-dimensional infra-red motion analysis video system, force plate analysis.

Exercise Biochemistry: blood and muscle biochemistry, gel electrophoresis, muscle histochemistry, DNA and RNA analysis.

Exercise Physiology and Health Promotion: treadmills, bicycle ergometers, body composition analyses (DEXA and Bod Pod), strength testing, electromyography, expired gas analyses.

EXERCISE SCIENCES

Athletic Training: two large, well-equipped facilities plus two satellite training rooms located in the Marriott Center and LaVell Edwards football stadium.

For a more detailed description of the graduate program requirements, see the department Web page at <http://exercisesciences.byu.edu>

COURSE DESCRIPTION

EXSC

501.Sports Medicine Pathology and Pharmacology. (3)

Sports medicine pathologies and related pharmacology for a variety of sports medicine/allied health care professions.
ExSc 320, PDBio 305; or equivalents.

560.Orthopaedic Pathomechanics. (2)

Advanced analysis of neuromusculoskeletal deformities and/or injuries. Therapeutic exercise and the use of orthoses.
ExSc 460 or equivalent.

625R.Joint Mobilization and Manual Therapy. (2)

The history, theory, evidence-based research, and application of joint mobilization of the ankle, knee, hip, shoulder, elbow and wrist joints; and positional release therapy.

625R.Strength Rehabilitation. (2)

Overview of different strength rehabilitation methods (and their history); examining their theoretical background and actual practice. Enhancing skills of critically reviewing literature.

625R.Spinal Manipulation and Mobilization. (2)

625R.Neural Basis of Rehabilitation. (2)

625R.Tissue Response to Injury. (2)

Students will gain a detailed understanding of the physiologic basis of musculoskeletal tissue injury. The class will focus on the process of inflammation and on skeletal muscle, tendon, ligament, bone and cartilage response to injury.
ATC, PT, or instructor's consent.

625R.Functional Testing and Exercise. (2)

625R.Electrotherapy, Ultrasound, and Diathermy. (2)

The history, theory, evidence-based research and application of several therapeutic modalities used in athletic training, physical therapy, and occupational therapy. Topics include: deep heating modalities (ultrasound and diathermy); electrotherapy (TENS, IFC, NMES, PENS, HVPC, iontophoresis).

625R.Cryotherapy. (2)

625R.Clinical and Educational Administration. (2)

625R.Diagnostic Testing. (2)

Students will gain an understanding of the use and purpose of clinical research modalities available for research in Exercise Sciences (i.e., EMG, ultrasound/Doppler, nerve conduction velocity, sensory testing, muscle stimulation/TENS, Isothermix temperature measures, etc.).
ATC, PT, or instructor's consent.

625R.Advanced Topics in Physical Medicine and Rehabilitation. (2)

Topics will be rotated and may include: electrotherapy, ultrasound, and diathermy; cryotherapy; orthotics; clinical and educational administration; functional testing and exercise; neural basis of rehabilitation; strength rehabilitation; joint mobilization and manual therapy; spinal manipulation and mobilization.
ATC, PT, or instructor's consent.

629R.Athletic Training Practicum. (1-6)

Academic and practical application of athletic training skills in the training room setting.

630.Research Methods in Exercise Sciences. (3)

Understanding, designing, and conducting research, including analysis of data using common statistical techniques.
STAT 511

640.Physical Activity and Health. (3)

Role of physical activity and fitness in the prevention and reversal of disease, including type 2 diabetes, heart disease, cancer, osteoporosis, etc., and in the promotion of health.
ExSc 463, 464; or equivalents.

661.Advanced Worksite Wellness. (3)

Management for effectively designing, marketing, implementing, and administering health promotion programs.
ExSc 455 or equivalent.

662.Mechanical Analysis of Activities. (2)

Analysis of human movement and sport activities using kinematic and kinetic descriptions and models of motion based on three-dimensional video and force plate techniques.
ExSc 362 or equivalent.

663.Research Techniques in Biomechanics of Sport. (2)

Theory and practice of research techniques in biomechanics: statics, dynamics, body segment parameters, photo instrumentation, electronic instrumentation, digital computer techniques, literature sources, and laboratory fundamentals.
EXSC 662; ExSc 362 or equivalent.

666.Exercise Physiology. (3)

Adjustments made by the body to accommodate physical activity.
ExSc 363 or equivalent.

667.Laboratory Methods and Procedures. (2)

Basic techniques and procedures used in human performance laboratories.

ExSc 363 or equivalent; 666 or concurrent registration.

668.Orthopaedic Anatomy. (4)

Investigating orthopaedic anatomy. Students dissect cadavers. PDBio 220, ExSc 390; or equivalents.

669.Exercise Testing and Prescription. (2)

Exercise testing and interpretation. Exercise prescription for healthy children and adults, athletes, and various clinical and special populations.

671.Advanced Lifestyle and Chronic Disease Prevention. (3)

Managing health risks, particularly those relating to cardiovascular disease, cancer, and obesity.

ExSc 387 or equivalent.

673.Advanced Obesity and Weight Management. (3)

Etiology, treatment, and prevention of obesity in various populations, emphasizing the role of exercise in weight control programs. ExSc 480 or equivalent.

688R.Health Promotion Practicum. (1-9)**691.Seminar. (1)**

Orientation to graduate work in the exercise sciences.

693R.Readings Seminar. (1)

Searching, critiquing, and interpreting scientific literature with goal of conducting scientific research.

699R.Master's Thesis. (1-9)**751.Doctoral Seminar: Professional and Scholarly Writing. (1)****753.Doctoral Seminar: Research and Grantsmanship. (1)****766.Advanced Exercise Physiology: Cardiopulmonary. (3)**

Cardiovascular and pulmonary physiology, assessments, responses to exercise, and interventions.

EXSC 666 & EXSC 667

769.Advanced Exercise Physiology: Skeletal Muscle. (3)

Effects of acute and chronic exercise on anatomy, physiology, and biochemistry of skeletal muscle.

EXSC 666; Chem 481 or equivalent.

797R.Individual Research and Study in Exercise Sciences. (1-9)

Undergraduate major in exercise sciences; matriculation for graduate study in the department.

799R.Doctoral Dissertation. (1-18)**FACULTY**

Bailey, Bruce W. *Associate Professor*, PhD, University of Kansas, 2005. Health Promotion

Bruening, Dustin A. *Assistant Professor*, PhD, University of Delaware, 2009. Biomechanics and Movement Science

Davidson, Lance *Assistant Professor*, PhD, Queens University, 2007. Exercise Physiology

Draper, David O. *Professor*, EdD, Northern Illinois University, 1988. Athletic Training

Feland, J. Brent *Associate Professor*, PhD, PT, Brigham Young University, 1999. Anatomy; Therapeutic Exercise; Rehabilitation

George, James D. *Associate Professor*, PhD, Arizona State University, 1995. Exercise and Wellness

Hager, Ronald Lee *Associate Professor*, PhD, Arizona State University, 1997. Motor Control; Children's Physical Activity

Hopkins, J. Tyson *Professor*, PhD, Indiana State University, 2000. Athletic Training

Hunter, Iain *Professor*, PhD, Oregon State University, 2001. Kinesiology; Biomechanics

Hyldahl, Robert D. *Assistant Professor*, PhD, University of Massachusetts Amherst, 2011. Athletic Training, Exercise Physiology

Johnson, A. Wayne *Associate Professor*, PhD, PT, Brigham Young University, 2007. Anatomy; Rehabilitation; Therapeutic Exercise

LeCheminant, James D. *Associate Professor*, PhD, University of Kansas, 2005. Health Promotion

Mack, Gary W. *Professor*, PhD, University of Hawaii, 1984. Biomedical Sciences

Mitchell, Ulrike H. *Assistant Professor*, PhD, PT, Brigham Young University, 2005. Anatomy; Rehabilitation; Therapeutic Exercise

Myrer, J. William *Professor*, PhD, Brigham Young University, 1983. Anatomy; Orthopaedic Impairments and Rehabilitation

Parcell, Allen C. *Professor*, PhD, Ball State University, 1998. Exercise Physiology

Ridge, Sarah T. *Assistant Professor*, PhD, University of Delaware, 2010. Biomechanics

Seeley, Matt *Associate Professor*, PhD, University of Kentucky, 2006. Exercise Science; Biomechanics

Tucker, Larry A. *Professor*, PhD, Southern Illinois University, 1981. Health Promotion; Research Methods

Vehrs, Pat R. *Associate Professor*, PhD, Brigham Young University, 1991. Exercise Physiology

FAMILY LIFE

Director: Busby, Dean
Associate Directors for Curriculum:
Erin Holmes, Laura Padilla-Walker
**Marriage, Family, and Human
Development Graduate Coordinator:**
Coyne, Sarah
**Marriage and Family Therapy
Graduate Coordinator:** Sandberg,
Jonathan

2086 JFSB, Provo, UT 84602-6710
(801) 422-2060
<https://familylife.byu.edu/graduate-degrees.html>

THE PROGRAMS OF STUDY

The goal of the graduate programs in the School of Family Life is to provide education that teaches students to conduct research that contributes to the understanding and enhancement of human development and marriage and family relationships. In addition, the graduate programs will educate students in the prevention and intervention that promotes quality family living across generations. The graduate programs in the school are noted for contributions in marriage preparation, family studies, social development, and marriage and family therapy.

Four degrees are associated with the School of Family Life: Marriage, Family, and Human Development MS; Marriage, Family, and Human Development PhD; Marriage and Family Therapy MS; Marriage and Family Therapy PhD.

Marriage and Family Therapy Program

Phone: (801) 422-5680

Address: 274 TLRB, Provo, UT 84602-6710

Web site: <http://mft.byu.edu/>

Marriage, Family and Human Development Program

Phone: (801) 422-2060

Address: 2086 JFSB, Provo, UT 84602

Web site: <http://mfhd.byu.edu/>

Marriage, Family, and Human Development - PhD

The graduate program is designed to address the theories, research, and practices that (1) strengthen marriages, (2) enhance the development of children, and (3) unfold the characteristics of quality nurturing relationships across generations.

The PhD degree in MFHD provides integrated and in-depth learning experiences in family studies and human development. It also offers the opportunity to acquire expertise in a number of different aspects of the field. The primary focus of doctoral study is to help students become effective educators and scholars. Many graduates find professional positions in university departments related to family studies or human development. Some find positions in community settings, research organizations, or the mass media; and others choose to work in business settings.

Typically from six to ten students are admitted each year to the program, with the proportion of MS and PhD degree candidates varying each year.

For additional information about scholarships, assistantships, ongoing faculty research programs, and research facilities, go to <http://mfhd.byu.edu/>.

Requirements for Degree

72 credit hours of course work; Master's and transfer credits will be applied to the elective requirements, unless a case can be made that the content of the master's or transfer course closely correlates to a course in the required core.

Required Core - 48 credit hours:

Theory - 3 credit hours:

MFHD 760 (3.0 credits) Family Theory Construction

Human Development - 6 credit hours:

MFHD 611 (3.0 credits) Advances in Human Development

Elective Human Development Content Course (3.0 credits)

Family Science - 6 credit hours:

MFHD 612 (3.0 credits) Instruction to Research and Theory in Family Studies

Elective Family Studies Content Course (3.0 credits)

Methods & Statistics - 15 credit hours:

MFHD 691 (3.0 credits) Graduate Research Methods

MFHD 600 (3.0 credits) Multiple Regression

MFHD 605 (3.0 credits) Structural Equation Modeling in Social Sciences

MFHD 706 (3.0 credits) Advanced Statistics

Elective Methods/Statistics Course (3.0 credits)

Dissertation - 18 credit hours:

MFHD 799R (18.0 credits) Doctoral Dissertation

Electives - 24 credit hours: Approved by your Graduate Committee

FINANCIAL ASSISTANCE

The programs offer graduate research and teaching assistantships, supplementary awards and scholarships, and internships as aid. Once admitted to the program, the student will receive specific information regarding their funding package.

RESOURCES AND OPPORTUNITIES

Certified Family Life Educator Program. Students in the School of Family Life may enhance their graduate programs by taking course work that qualifies them for provisional status as a certified family life educator (CFLE). This is a nationally recognized credential given by the National Council on Family Relations for professionals who specialize in teaching and

enrichment of marriage and family relationships. The graduate programs in the School of Family Life have been approved by the National Council on Family Relations as offering a quality curriculum that fulfills many of the CFLE requirements.

Family Studies Center. An interdisciplinary research institute focusing on studies related to all aspects of the family, the center encourages and supports research on family-related topics ranging from prenatal development to problems of aging. Many of the faculty in the college are actively engaged in such research and receive support from the center. Activities include providing grants, research assistance, conferences on special topics every two years, and outreach to bring valuable information on strengthening families to both families and family practitioners.

Comprehensive Clinic. The Comprehensive Clinic at Brigham Young University is a unique interdisciplinary training and research facility housing the finest video and computer facilities available and a staff of skilled technicians and secretaries to support graduate student and faculty research. The clinic currently functions as a training facility for an AAMFT-approved marriage and family therapy PhD and for MS training programs. In addition, the clinic provides the university and the broader geographical community with mental health services involving between 200 and 250 clients each week.

Family, Home, and Social Sciences Computing Center. The center assists faculty and students with social science data processing and other computing needs on mainframe and personal computers. Technical support and consultation services for both statistics and graphics are available to students working on research projects, theses, and dissertations.

Child and Family Laboratories. These excellent facilities provide a practicum setting in which graduate students develop skills in conducting and interpreting research involving small children.

The School of Family Life also provides additional research and academic support to family life programs through the

Camilla Eyring Kimball Chair of Home and Family Life.

COURSE DESCRIPTION

MFT

501R.Workshop in Marriage and Family Therapy. (1-2)

Training in delivery of and research about psychoeducational programs for couples and families. Instructor's consent.

595R.Special Topics in Marriage and Family Therapy. (1-2)

Individual study for qualified students. Marriage and family therapy major status; instructor's consent.

600.Research Methods for Marriage and Family Therapy. (3)

Overview of research methods commonly used in the social sciences with a particular emphasis in marriage and family therapy. Experimental design, survey research, and qualitative methods are included.

603R.Research Practicum. (3)

Design, data collection, data analysis, and write-up. Instructor's consent.

605.Advanced Statistics in Family Studies. (3)

Statistical analysis of family science research. Outcomes include understanding research findings in research articles, ability to perform and interpret regression analysis, ANOVA, and other statistical procedures using SPSS.

630.Theoretical Foundations of Family Systems for Marriage and Family Therapy. (3)

Systems paradigm and theories for understanding marriage and family processes and as a foundation for marriage and family therapy intervention.

Marriage and family therapy major status; or SFL 451 and instructor's consent.

645.Analysis and Treatment of Human Sexual Development. (3)

Knowledge and skill required to analyze and treat questions related to human sexual development.

MFT 650

649.Addictions and Violence in Families. (3)

Assessment and treatment of multiple-problem family systems, emphasizing addictions and abuse.

650.Theoretical Foundations of Marital and Family Therapy. (3)

Epistemological and theoretical issues in marital and family therapy, including normal family processes and personal and intergenerational family issues.

651.Psychopathology and Assessment in Marriage and Family Therapy. (3)

Diagnosing and assessing mental disorders and dysfunctional relationships. Etiology and diagnosis of individual, marital, and family psychopathology.

652.Marital and Individual Psychotherapy. (3)

Assessment, intervention techniques, therapist's role, and principle processes in theories of systemic individual and marital psychotherapy.

653.Family and Multigenerational Psychotherapy. (3)

Systemic theories and strategies to diagnose and treat specific problems in dysfunctional families.

FAMILY LIFE

654.Issues of Gender and Ethnicity in Marriage and Family Therapy. (3)

Gender, ethnic, and minority issues in family systems, society, and clinical practice as they relate to individual, marital, and family treatment.

655R.Intermediate Practicum in Marriage and Family Therapy. (2-3)

Experience in counseling individuals, premarital and marital dyads, families, groups of dyads, and multiple families.

656.Ethical, Legal, and Professional Issues for Family Therapists. (3)

663.The Individual and Family Over the Life Course. (3)

Stability and change in individual development and family relationships over the life course.

670R.Group Process Interaction. (1-2)

Theoretical foundations, key issues and themes, and instruction in facilitating group therapy practice.

693R.Independent Readings. (1-3)

695R.Play Therapy. (1-3)

695R.Special Topics. (1-3)

Variable topics, including (1) Spirituality in Clinical Perspective and Practice, (2) Premarital and Remarital Intervention, (3) Play Therapy, (4) Research Methods for MFT, and (5) Group Process.

699R.Master's Thesis. (1-9)

700.Family Therapy Research Methods. (3)

Advanced study of MFT research methods, including meta-analysis, power analysis, grant writing, and other advanced topics. MFHD 600, Soc 303R; or equivalents.

750.Supervising Marriage and Family Therapy. (3)

Theory, research, and practice of supervising marriage and family therapists. Supervised experience.

751.Advanced Theory in Marriage and Family Therapy. (3)

Advanced family therapy approaches to the diagnosis and treatment of affective, behavioral, and cognitive disorders.

753.Advanced Clinical Specialization in Marriage and Family Therapy. (3)

Advanced approaches in treating dysfunctional individual, marital, and family systems.

754.Family Therapy for Children and Adolescents. (3)

Family psychotherapy with children and adolescent issues, emphasizing treatment and family interventions. Various theoretical perspectives as well as diagnosis and assessment.

755R.Advanced Practicum in Marriage and Family Therapy. (2-3)

MFT 650, 655R, or equivalent.

760R.Supervision Practicum in Marriage and Family Therapy. (1)

Supervised experience in supervising practicum students. MFT 750 and instructor's consent.

770R.Clinical Internship. (1)

Full-time family therapy training and practice at an approved agency.

793R.Research Seminar in Marriage and Family Therapy (1-3)

Integrating and applying research design and statistics to the study of marital and family therapy.

799R.Doctoral Dissertation. (1-9)

COURSE DESCRIPTION

MFHD

501R.Workshop in Marriage, Family, and Human Development. (1-2)

Intensive study in applying principles of specified family sciences, subject matter in early childhood education, child development, family relationships, family resource management, or marriage/family therapy. 8 hours in the School of Family Life or the School's Director's consent.

511.Familial Influences on Children's Social Development. (3)

Current theories and research on social development, peer relations, and behavior. Familial/parenting effects as moderated by beliefs, genetics, gender, social cognitions, culture, child guidance, interventions. SFL 331 or higher.

513.Applied Statistics in the Social Sciences. (3)

This course applies statistical principles to social science problems by utilizing the basics of statistical software in developing and testing research questions as well as conducting univariate and multivariate statistics such as t-tests, ANOVAs, and regression models. SFL 290

514.Theories of Human Development. (3)

Models and concepts in dominant contemporary developmental theories. SFL 331 or higher.

542.Work and Family. (3)

Introduction to contemporary work/family issues. Framework for helping parents and managers deal effectively with work/family issues at work and home.

550.(MFHD-Soc) Contemporary Family Theories. (3)

Introduction to basic micro, macro, and processual approaches to study of the family; social and political theory on the family; philosophical issues and assumptions underlying family theory, research, and practice.

SFL 451, Soc 310, 311; or equivalents.

566.Family Life Education in the University. (3)

Delivering family life education in university settings. Working with a faculty mentor, making presentations, and preparing basic instructional materials. Instructor's consent.

567R.Practicum in Family Life Education. (1)

Supervised experience teaching family living courses in a university setting.

MFHD 566 or instructor's consent.

595R.Special Topics in Marriage, Family, and Human Development. (1-3)

Individual study for qualified students.

For marriage, family, and human development major; instructor's consent.

600.Multiple Regression Analysis. (3)

Techniques and assumptions of regression models, data management, and analysis. Topics include ordinary least squares, binary, ordinal, and multiple logistic regression, and models for count variables.

MFHD 513; or MFHD 691

602.(MFHD-Soc) Experimental Design. (3)

Research methods, logic, writing, and data analysis. MFHD-Soc 600, Stat 510 or equivalent, or instructors consent.

603R.Research Practicum. (3)

Design, data collection, data analysis, and write-up. Instructor's consent.

605.Structural Equation Modeling in Social Sciences. (3)

Basic tools in structural equation modeling (SEM), including confirmatory factor analysis (CFA), latent variables, and combining CFA with regression. Applications of SEM to (a) multiple groups, (b) dichotomous and count outcomes, and (c) longitudinal or repeated measures.

Stat 511 or equivalent.

611.Advances in Human Development. (3)

Recent advances in developmental psychology emphasizing infant development as it informs our understanding of perceptual, cognitive, linguistic, and social development in later childhood. Graduate standing or instructor's consent.

612.Introduction to Research and Theory in Family Science. (3)

Research and theories about current topics in family science. Instructor's consent.

625.Outreach in Family Life Education. (3)

Principles and practices for the development, implementation, and evaluation of family life education programs for audiences and settings outside the traditional classroom: community workshop teaching, print media, internet technology, radio, and television.

645.Religion and Family. (3)

Major research findings and theories linking religious belief, practice, and community to marriage and family life from the disciplines of human development, psychology, sociology, family studies, health, family therapy, and religious studies.

665.Philosophy in Family Life Education. (3)

Ethical issues and interpretive frameworks in human science that address quality of life in families. SFL 480 or instructor's consent.

691.Graduate Research Methods. (3)

Building on introductory knowledge, learning and exploring the quantitative research designs most commonly used in marriage, family, and human development studies.

SFL 290, Stat 121; or equivalents.

693R.Independent Readings. (1-3)**695R.Social Withdrawal and Self-Processes. (3)****695R.Special Topics. (1-3)**

Variable topics, including socialization of children, therapeutic intervention with special populations, and marital processes.

695R.Child Socialization. (1-3)**695R.Getting Together, Mate Selection, and Early Marriage. (3)****699R.Master's Thesis. (1-9)****706R.(MFHD-Soc) Advanced Statistical Methods. (3)**

Topics include advanced structural equations and hierarchical linear models, or panel data techniques and generalized linear models. Soc 605 or MFHD 605 or Psych 502.

760.Family Theory Construction. (3)

Introduction to family theories and applied experience in theory construction and analysis focusing on familial processes and human development.

792R.(MFHD-Soc) Family Symposium. (0.5)

Presentation and discussion of professional papers about the family.

799R.Doctoral Dissertation. (1-9)**FACULTY**

Anderson, Shayne R. *Associate Professor*

Bean, Roy A. *Associate Professor, PhD, Brigham Young University, 1997. Parent-Adolescent Relationships in Ethnic Families; Culturally Competent Family Therapy*

FAMILY LIFE

- Bradford, Angela B.** *Assistant Professor*, PhD, Auburn University, 2012. Mechanisms of Change in Couples' Interventions; Neurocardiological Factors in Therapy; Systemic Examinations of Individual-Level Phenomena
- Busby, Dean M.** *Professor*, PhD, Brigham Young University, 1990. Premarital Couples; Relationship Assessment
- Butler, Mark** *Professor*, PhD, Texas Tech University, 1996. Family Therapy
- Carroll, Jason S.** *Professor*, PhD, University of Minnesota, 2001. Marriage Relationships; Professional-Family-Community Partnerships
- Coyne, Sarah** *Associate Professor*, PhD, University of Central Lancashire, 2004. Effect of Media on Children's Development
- Crane, D. Russell** *Professor*, PhD, Brigham Young University, 1979. Marriage and Family Therapy
- Dollahite, David C.** *Professor*, PhD, University of Minnesota, 1988. Marriage and Family Processes in Christian, Jewish, and Muslim Families; Latter-day Saint Marriage and Family Life
- Draper, Thomas W.** *Professor*, PhD, Emory University, 1976. Early Childhood Education/Human Development
- Duncan, Stephen F.** *Professor*, PhD, Purdue University, 1988. Family Life Education; Marriage Preparation
- Dyer, W. Justin** *Assistant Professor*, PhD, University of Illinois, 2009. Fatherhood; Incarcerated Fathers; Fathers of Children with Disabilities; Quantitative Methodology
- Harper, James M.** *Professor*, PhD, University of Minnesota, Minneapolis, 1979. Family Interaction; Sibling Relationships; Aging Couples
- Hart, Craig H.** *Professor*, PhD, Purdue University, 1987. Human Development and Early Childhood Education
- Hawkins, Alan J.** *Professor*, PhD, Pennsylvania State University, 1990. Educational and Policy Interventions to Strengthen Marriage
- Hill, Jeff** *Professor*, PhD, Utah State University, 1995. Work and Family; Family Relationships
- Holmes, Erin K.** *Associate Professor*, PhD, University of Texas at Austin, 2006. Fathering; Transition to Parenthood
- James, Spencer L.** *Assistant Professor*, PhD, Pennsylvania State University, 2012. Marriage and Family; Social Demography; Relationship Quality, Dissolution, and Formation; Quantitative Methods
- Johnson, Lee** *Assistant Professor*, PhD, Kansas State University, 1998. Benefits of adding physical exercise to couple and family therapy interventions, research methods, role physiology plans in couple and family relationships
- Larson, Jeffery H.** *Professor*, PhD, Texas Tech University, 1980. Marriage and Family Therapy; Family Life Education
- Lee, Chien-ti** *Assistant Professor*, PhD, Utah State University, 2010. Cross-cultural adolescent psychosocial development
- Marks, Loren Dean** *Professor*
- Miller, Richard** *Professor*, PhD, University of Southern California, 1989. Marital Process over the Life Course; Multicultural Families
- Nelson, David A.** *Professor*, PhD, University of Minnesota Institute of Child Develop, 1999. Child Aggression and Victimization; Cross-Cultural Parenting and Child Development
- Nelson, Larry J.** *Professor*, PhD, University of Maryland, 2000. Social Development of Young Children; Emerging Adulthood
- Padilla-Walker, Laura** *Associate Professor*, PhD, University of Nebraska, Lincoln, 2005. Parenting; Adolescents' Moral/Prosocial Development
- Porter, Chris** *Associate Professor*, PhD, Purdue University, 1996. Infancy and Toddlerhood
- Robinson, Clyde C.** *Associate Professor*, PhD, University of North Carolina, Greensboro, 1982. Human Development/Early Childhood Education
- Roper, Susanne Olsen** *Associate Professor*, PhD, University of Georgia, 1992. Parenting and Children's Social Development; Families of Children with Chronic Conditions and Disabilities
- Sandberg, Jonathan G.** *Professor*, PhD, Kansas State University, 1998. Couples and Health; Marriage and Family Therapy Outcome, Process, and Clinical Research
- Willoughby, Brian J.** *Assistant Professor*, PhD, University of Minnesota, 2009. Emerging Adult Sexuality and Dating; Attitude Formation and Development
- Yorgason, Jeremy B.** *Associate Professor*, PhD, Virginia Tech, 2003. Family Gerontology; Health in Marriage

FRENCH AND ITALIAN

Chair: Cropper, Corry
Graduate Coordinator: Unlandt, Nicolaas

3134 JFSB, Provo, UT 84602-6706
 (801) 422-2209
french_italian@byu.edu
<http://frenital.byu.edu/>

THE PROGRAMS OF STUDY

The programs in French are designed to help students improve their research ability, further develop critical thinking and writing skills, broaden their understanding of French and francophone cultural history, and increase their understanding of the French language. The programs may also serve as a step toward doctoral studies or toward a career in teaching (SLaT).

One degree is offered through the Department of French and Italian: French Studies-MA. An MA in Second Language Teaching (French) is also offered as part of the College of Humanities' Second Language Teaching (SLaT) program. See description in Center for Language Studies section of this catalog.

The average number of students admitted to the program is from four to five per year. Most students require four semesters to complete the degree, but it is possible to complete it in one year.

French Studies - MA

The departmental MA concentrates on establishing a solid foundation in French studies with a particular emphasis on literature and analytical skills. The thesis should represent in both substance and scope significant research that contributes to the discipline of French studies. Most students also benefit from additional training and experience as research assistants or as teachers in lower-division French classes.

Requirements for Degree

Credit hours (30): minimum 24 course work hours plus 6 thesis hours (Fren 699R).

- Required courses: Fren 660R Critical Theory or equivalent; minimum 18 credit hours in French; maximum 3 credit hours in an approved course in a related field such as comparative literature, humanities, linguistics, or romance philology; 6 hours of Fren 699R (thesis). Students may petition to replace up to 3 credit hours of French with course work in a related field.
- Writing project: thesis.
- Examinations: comprehensive written and oral examinations on course work and reading list. Oral defense of thesis.

FINANCIAL ASSISTANCE

Several graduate teaching fellowships and a few partial-tuition scholarships, based on need and academic record, are available.

RESOURCES AND OPPORTUNITIES

- Foreign Language Student Residence.
- Internships in French-speaking countries.
- Teaching opportunities in France and at BYU as Student Instructors
- Graduate Student Conferences at BYU and elsewhere.
- Graduate Mentoring Grants to support specialized research topics.
- Departmental Symposia featuring guest speakers.
- International Cinema featuring French-speaking films.
- French Club activities including the production of plays, cultural events, etc.
- Opportunities to publish in and/or to edit the departmental journal,

- *Lingua Romana*.

For a more detailed description of the graduate program requirements, see its online handbook at the French and Italian Department home page and consult the MA French Studies link under the Programs tab.

COURSE DESCRIPTION

FREN

510.MA Practicum 1. (1)

Critical strategies and interpretative skills necessary for MA examinations.
 Graduate status.

511.MA Practicum 2. (1)

Critical strategies and interpretative skills necessary for MA examinations.
 Graduate status.

512.MA Practicum 3. (1)

Research tools and methods, the process of selecting a thesis topic, compiling a bibliography, and writing a prospectus.
 Graduate status.

533.Advanced Studies in French Linguistics. (3)

Advanced study of linguistic features such as phonetics and phonology, semantization, lexical development, morphology, and contrastive syntax.

599R.Academic Internship: French Language Field Experience. (3)

On-the-job experience in French; research paper analyzing the experience and other requirements as graduate coordinator sees fit. Program coordinator's consent.

620R.Advanced Studies in French Culture. (3)

In-depth study of French historical, political, and social issues or artistic trends.
 Admittance to MA program.

GEOLOGICAL SCIENCES

630R.Studies in Periods and Movements. (3)

Approaches to literature from the perspective of historical periods and/or cultural or political movements.

640R.Author Studies. (3)

Major authors from a variety of critical perspectives.

650R.Studies in Genre. (3)

Literary genres.

660R.Studies in Theory and Interpretation. (3)

Literary theory or theoretical applications to literary interpretation.

690R.Seminar in French. (1-3)

Group or individual study supervised by graduate faculty member in varying topics of specific interest in French.
Admittance to MA program.

690R.Principles for Language Teachers. (1-3)

Admittance to MA program.

699R.Master's Thesis. (0.5-6)

FACULTY

Cropper, Corry *Professor, PhD, University of Illinois, 1998. Nineteenth Century; French Short Story; Cultural History of Sports*

Erickson, Robert G. *Assistant Professor, PhD, Brigham Young University, 2000. Instructional Psychology and Technology; Second Language Acquisition*

Flood, Christopher *Assistant Professor, PhD, University of California, Los Angeles, 2013. French Literature; Literary Analysis; Comedy and Satire*

Hudson, Robert J. *Assistant Professor, PhD, University of California, Los Angeles, 2008. French Renaissance, Lyricism; Gallicism; Anthropology; Film*

LeBras, Yvon *Professor, PhD, Laval University, 1992. Seventeenth Century; French Canadian Novel; Travel Literature; Accredited Translation*

Lee, Daryl *Associate Professor, PhD, Yale University, 1999. French Verse; Nineteenth Century; Film; Politics and Literature; Paris and Literature*

Olivier, Marc *Associate Professor, PhD, University of Washington, 1999. Technology and Culture; Old Regime Science and Literature; Film*

Phenix, Sara *Assistant Professor, PhD, University of Pennsylvania, 2013. Nineteenth Century Literature; Fashion; Women's Studies*

Sprenger, Anca Mitroi *Associate Professor, PhD, University of Southern California, 1997. Eighteenth-Twentieth Centuries; Literature and the Sacred; Canadian Literature*

Unlandt, Nicolaas G. W. *Associate Professor, DLitt, University of Amsterdam, Netherlands, 1992. Middle Ages; Medieval Languages; Troubadour Poetry*

GEOLOGICAL SCIENCES

Chair: McBride, John H.
Graduate Coordinator: Dorais, Michael J.

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<http://www.geology.byu.edu>

THE PROGRAMS OF STUDY

Geology is the science that reveals how the Earth works. The graduate program in geology at Brigham Young University prepares scientists to solve many of society's environmental and resource problems.

The department offers one degree: Geology-MS. Areas of specialization include: Earth Science Education, Environmental Geology, and Geology.

The expected duration of the MS program is two years for full-time students who enter without deficiencies. The MS degree is designed to give the student a solid foundation in the theoretical and applied aspects of geology and a strong research experience. The thesis component allows each student to develop skills in defining a significant problem, developing a research strategy, acquiring and analyzing data, and technical writing. A MS degree in geology prepares a student for a wide variety of employment opportunities in industry, education, and government, or to pursue a doctoral degree.

The department typically has 30 MS students.

Geology - MS

Pursuit of the MS degree not only helps prepare students for exciting career opportunities in areas of distinct benefit to mankind, but it also allows them to experience the challenges and rewards of modern scientific research. It is expected that the thesis work will culminate in new understanding of a problem of scientific significance and that results will be published in a reputable scientific journal.

Areas of specialization: Earth Science Education, Environmental Geology, and Geology.

Requirements for Degree

Credit hours (30): minimum 24 course work hours plus 6 thesis hours (Geol 699R); 1 hour of Geol 591R.

Required courses:

- Geology: Geol 601 and others to be determined in consultation with advisor.
- Environmental geology: Geol 601, 635, 636, 637; 9 hours from Geol 411, 435, 436, 445, 521, 559, 560, 590R (approved by graduate committee), PWS 511, Ch En 411, CE En 545, 550, 555, 641, 654, Hlth 454. Recommended: Stat 510, 511.

Earth science education: Geol 697R (approved by graduate committee); 6-9 hours from Geol 411, 435, 440, 445, 451, 460, 480; 6 hours from IP&T 560, 564, 620, 652, 661.

- Any additional graduate courses in geology approved by graduate committee may be taken to satisfy remainder of 24 course work hours

Publishable thesis.

Examinations: (A) comprehensive oral examination on course work; (B) final oral defense of thesis.

FINANCIAL ASSISTANCE

New graduate students are eligible for departmental scholarships, tuition scholarships, and teaching or research assistantships on a competitive basis.

Most regular degree-seeking students receive some form of financial aid. However, none may expect financial assistance from the department for more than four semesters.

Graduate students are also encouraged to seek additional support from industries and agencies outside the Department of Geological Sciences.

Note: Such requests must be submitted to the department chair, who will forward them with a supporting letter.

RESOURCES AND OPPORTUNITIES

The Department of Geological Sciences is in the Eyring Science Center which contains state-of-the-art computer resources, office space for graduate assistants, and modern laboratories. Our lab facilities house extensive and specialized instrumentation and mineral, rock, and fossil collections. The location of the university campus on the Wasatch Front near the juncture of the Rocky Mountains, the Colorado Plateau, and the Great Basin provides an incomparable natural laboratory for geology studies. The Department of Geological Sciences utilizes this natural setting, and the many geologic problems that remain in it to be studied, as one of our main assets.

The department is well equipped for graduate research in geology. A partial list of research equipment available includes: a wavelength dispersive electron microprobe (Cameca SX-50), two stable isotope ratio mass spectrometers, X-ray fluorescence spectrometer, atomic absorption spectrophotometers, a gradient elution ion chromatograph, a powder X-ray diffractometer, an atomic force microscope, ICP-OES, a cathodoluminescence microscope, a

fluid inclusion heating and freezing stage, a core plug porosimeter/permeameter, two liquid scintillation counters, 3D subsurface mapping software, high-resolution GPS, Worden gravimeters, proton precession magnetometers, a ground-penetrating radar system, a twenty-four-channel seismic system and portable energy source, variable offset electrical resistivity equipment, and a core lab porosity/permeability analyzer. A new 12-foot stream table has just been acquired to enhance teaching and research. Additional research facilities include the following:

Museum of Paleontology includes exhibits, preparation laboratories, and fossil collections. Exhibits ranging from minerals to invertebrate and vertebrate fossils are open to the public and are an integral part of many courses. Collections are primarily from the intermountain region and include extensive assemblages of Late Jurassic and Early Cretaceous dinosaurs, Cenozoic vertebrates, and the Tidwell paleobotany collection, all of which provide research opportunities for faculty and students. Unrivaled field equipment and preparation laboratories support ongoing research projects.

Fission Track Dating

Laboratory provides student and faculty researchers with the geochronological potential to solve problems in stratigraphy and structural geology, to determine rates of uplift and thus aid in thermal modeling, and to provide support for numerous other faculty and student research projects where dating of events is necessary.

Geophysics Laboratory supports research work in exploration, environmental, and engineering geophysics by housing seismic, ground-penetrating radar, electrical resistivity, and gravity, magnetic, and electromagnetic instrumentation, as well as computer support systems.

GEOLOGICAL SCIENCES

Hydrogeochemistry Laboratory supports research programs in hydrology, environmental geology, economic geology, and petrology. In addition, the lab is used in teaching modern analytical techniques in upper-division undergraduate and graduate courses. Groundwater composition, migration, and pollution have been major emphases of research.

Isotope Laboratory supports faculty, graduate, and undergraduate research by providing for analysis of stable isotopes of H, C, N, and O, as well as ^{14}C and ^3H . Analysis of H and O isotopes in water is fully automated. Hydrology, paleohydrology, paleoclimatology, and economic geology are currently major areas of research and teaching supported by this laboratory.

Mineral Surface Chemistry Laboratory supports research on low-temperature chemical reactions that occur at the interface between mineral surfaces and aqueous solutions. The lab includes an atomic force microscope, a surface-area analyzer, and wet chemical facilities. Computer equipment and software are also available for molecular modeling.

Sedimentology/Stratigraphy Laboratories support studies in stratigraphy, clastic and carbonate rocks, and micropaleontology. Analytical equipment to map and characterize both surface and subsurface reservoir-quality rocks, to resolve complex stratigraphic problems, and to understand diagenesis in sedimentary rocks is available to students and faculty. Studies conducted in the labs have emphasized fluid flow and migration of both hydrocarbons and water, as well as detailed sequence stratigraphic modeling.

Structure and Tectonics Laboratory supports research of orogenic processes and associated Natural Hazards. Projects of orogenic processes include investigations of channel flow in the Himalaya and active arc-continent collisions, geodetic studies of plate boundary

reorganization in the Indonesian region and the northern Rockies seismic belt, ophiolite genesis and emplacement, collisional melange genesis, rock versus surface uplift rates, finite difference modeling of paleo-tsunami in Indonesia, structural studies of Sevier and Basin and Range deformational features, climate versus tectonics in SE Asia, and studies of paleo-seismic records in lake sediments.

Ina Solar System Image Laboratory provides resources for studies of planetary surfaces from spacecraft imaging. Current studies include dunes, mountains, rivers, lakes, and cryovolcanoes on Saturn's moon Titan, volcanism and tectonism on Jupiter's moon Io, and lunar volatile processes. Facilities include two MacPro machines and a PC with image processing software, including the USGS program ISIS, ArcGIS, ArcMap, Adobe Photoshop, Illustrator and similar programs. A central server provides storage, integration and security, and 42" printer can produce posters for conferences and prints for research and outreach.

Faculty research interests currently include the following: the geodynamic evolution of active arc-continent collision (structural features, uplifted synorogenic deposits and coral terraces, the GPS velocity field, and climate feedbacks); investigations of subsurface geology using seismic, gravity, and magnetic methods; composition of thermal waters; paleohydrology, paleoclimatology, and hydrogeology of arid and semiarid regions; petrogenesis of alkaline, mafic magmas; the origin of granitic magmas; mineral surface structure and chemistry; crystallography and crystal chemistry of silicate minerals; studies of Cenozoic magmatism and tectonism in the western United States; correlation of volcanic ash beds in western North America; origins of gold, platinum, copper, and molybdenum deposits; tungsten skarns; reservoir characterization and sequence stratigraphy; Carboniferous-

Permian conodont biostratigraphy; Jurassic and Cretaceous dinosaurs and paleoenvironments, Morrison and Cedar Mountain formations, vertebrate dinosaur taphonomy, glaciology, glacial paleoclimatology, aeolian processes and planetary geology.

COURSE DESCRIPTION

GEOL

500.(Geol-Chem-C S-Math-MthEd-Phscs-Stat) Business Career Essentials in Science and Math. (1.5)

Introduction for science, math, and statistics majors to careers in industry. Project planning, oral and written business presentations, business accounting, and technology readiness.

504R.Global Geology Field Studies. (1-3)

In-depth study of classic geologic localities, such as Hawaii, the Bahamas, and the Appalachians, preliminary to on-site field study. Any senior-level geology course; instructor's consent.

521.Borehole Geophysics and Geology. (3)

Applied well log analysis, including conventional and new techniques. Subsurface geology and lithology determined from many logs. Determining porosity, permeability, and fluid saturation with hydrology, and hydrocarbon applications. Instructor's consent.

525.Petroleum Systems Analysis. (4)

Properties of petroleum; exploration methods; generation and migration of hydrocarbons, reservoirs, traps, and seals; sedimentary basin classification; energy resources. Extended field trip required. Geol 370 or equivalent.

530.Geological Communications Laboratory. (3)

Designing and creating a variety of student-selected geological illustrations emphasizing maps and cross-sections.

Instructor's consent; graduate status.

531.Geoscience Data Analysis. (3)

Basic scientific computing skills in MATLAB, and application of statistical and numerical modeling techniques to geoscientific problems. Stat 121 or equivalent.

535.Contaminant Hydrogeology. (3)

Principles, tools, and applications used to solve heavy metal, organic, and radionuclide groundwater contamination problems. Topics include regulations, mass transport, multiphase flow, transformation, retardation, and attenuation. Geology 435 or equivalent.

540.Principles of Glaciology. (3)

Geophysical problems involving ice in the environment and its role in global change. Topics include atmospheric ice, snow pack, glaciers, ice sheets, sea ice, permafrost, and ice age theories.

545.Isotope Geochemistry-High Temperature Applications. (3)

Use of stable and radioactive isotope systematics in geochronology in investigation of the origins of igneous and metamorphic rocks and in the study of tectonics. Geol 352 or equivalent.

546.Isotope Geochemistry-Low Temperature Applications. (3)

Use of stable, radioactive, and radiogenic isotope systematics in geochronology and in investigation of the origins of fluid, sediment, and organic matters in low temperature settings. Geol 445 or equivalent.

550.Environmental Soil Chemistry. (3)

Chemistry of soil systems at macroscopic and microscopic scales, examined from the perspective of scientists interested in environmental assessment and remediation. Chem 105, 106, 107; or equivalents.

551.Advanced Mineralogy. (3)

Crystallography, structure, and crystal chemistry of major silicate mineral groups. Geol 351 or equivalent.

552.Igneous Petrology. (3)

Origin and evolution of magmas, emphasizing trace element and isotopic compositions and intensive properties as calculated from mineral compositions. Geol 352 or equivalent.

553.Metamorphic Petrology. (3)

Principles of metamorphism, including chemical equilibrium and thermodynamics of metamorphic reactions, geothermobarometry, origin and interpretation of zoned metamorphic minerals, pressure-temperature paths, and metamorphism of pelites, mafic, ultramafic and carbonate rocks. Additional subjects based on interest of the students. GEOL 352

555.Volcanoes and Ore Deposits. (1-3)

Examination of the role of volcanic rocks and processes in the generation of ore deposits. Geol 352 or equivalent.

560.Waveform Geophysics. (3)

Principles and methods used in seismic and ground-penetrating radar (GPR) geophysics, with petroleum exploration, engineering, environmental, and hydrological applications. Includes introduction to state-of-the-art industrial software applications for data processing and visualization. Instructor's consent.

565R.Special Topics in Geology. (0.5-4)

The following topics may be offered on demand: geology for teachers, ore deposits, solid-water interface chemistry, X-ray crystallography. Instructor's consent.

574.Advanced Stratigraphy. (3)

Studying the stratigraphic record through modern methods of correlating stratal packages, emphasizing concepts of sequence and seismic stratigraphy, and utilizing methods of chronostratigraphy, biostratigraphy, lithostratigraphy, and absolute dating. Extended field trip required. Geol 370 or equivalent.

575.Advanced Structural Geology. (3)

In-depth discussions of a variety of topics in structural geology, emphasizing current literature and problems. Geol 375, 410; or equivalents.

576.Three-Dimensional Subsurface Mapping and Evaluation. (3)

Advanced interpretation of 3D seismic reflection data. Integrating well and seismic data to interpret complex geologic systems. Implications for understanding hydrocarbon reservoirs. GEOL 476

586.Vertebrate Paleontology. (4)

Paleobiology, osteology, and phylogeny of the vertebrates. Field trips required. Lab studies. Instructor's consent.

590R.Exploratory Geophysics and Modeling. (0.5-3)

Short, graduate-level courses and extended field trips offered on an irregular basis. The following topics may be offered given sufficient demand: Energy Systems; Exploratory Geophysics and Modeling; and Planetary Seminar. Instructor's consent.

GEOLOGICAL SCIENCES

590R.Planetary Seminar. (0.5-3)

Short, graduate-level courses and extended field trips offered on an irregular basis. The following topics may be offered given sufficient demand: Energy Systems; Exploratory Geophysics and Modeling; and Planetary Seminar. Instructor's consent.

590R.Energy Systems. (0.5-3)

Short, graduate-level courses and extended field trips offered on an irregular basis. The following topics may be offered given sufficient demand: Energy Systems; Exploratory Geophysics and Modeling; and Planetary Seminar. Instructor's consent.

590R.Topics in Geology. (0.5-3)

Short, graduate-level courses and extended field trips offered on an irregular basis. The following topics may be offered given sufficient demand: Energy Systems; Exploratory Geophysics and Modeling; and Planetary Seminar. Instructor's consent.

591R.Seminar. (0.5)

Seminar on various geologic topics by guest speakers.

592R.Career Pathways Seminar. (0.5)

Seminar on graduate school and career opportunities by guest speakers.

599R.Academic Internship. (1-9)

601.Planet Earth. (3)

Rigorous review of the fundamentals of geology, including Earth's origin and the evolution of the major geologic systems. Field trips. Undergraduate degree.

606.Paleoclimatology. (3)

Quaternary geochronology and stable isotope fundamentals followed by survey of major paleoclimate proxy records. Quantitative methods emphasized where appropriate. Instructor's consent.

621.Petrophysics and Reservoir Characterization. (3)

Advanced use of well log tools combined with direct (core) or analog (outcrop) lithologic information to characterize underground petroleum or groundwater reservoirs. GEOL 521

635.Advanced Hydrogeology. (3)

Equations governing fluid flow through saturated porous media under various geologic conditions; applying hydraulic characteristics to analysis of well and aquifer conditions. Geol 435 or instructor's consent.

636.Hydrogeochemistry. (3)

Nature and origin of solutes and isotopes in groundwater systems. Applying geochemistry to evaluation of groundwater recharge conditions and flow patterns. Geol 445 or instructor's consent.

666.Instrumental Methods. (3)

Use of instrumentation for determining mineralogical, chemical, and isotopic composition of geological materials. Geol 351, 352; or equivalents.

671.Sedimentary Petrology--Carbonate Rocks. (3)

Characteristics and significance of limestones and dolomites. Geol 370 or equivalent.

672.Sedimentary Petrology--Clastic Rocks. (3)

Characteristics of conglomerates, sandstones, and shales. Provenance studies of various terrains by thin section analysis. Extended field trip required. Geol 370 or equivalent.

695R.Research. (1-4)

696R.Readings and Conferences in Geology. (1-4)

697R.Directed Field Studies. (1-6)

699R.Master's Thesis. (1-9)

FACULTY

Bickmore, Barry R. *Professor*, PhD, Virginia Polytechnical Institute and State University, 1999. Low Temperature Geochemistry; Mineral Surface Chemistry; Water-Rock Interactions

Britt, Brooks B. *Associate Professor*, PhD, University of Calgary, Canada, 1993. Vertebrate Paleontology; Taphonomy

Carling, Gregory T. *Assistant Professor*, PhD, University of Utah, 2012. Hydrogeology; Engineering Geology; Hydrogeochemistry

Christiansen, Eric H. *Professor*, PhD, Arizona State University, 1981. Petrology; Volcanology

Dorais, Michael J. *Research Professor*, PhD, University of Georgia, 1987. Igneous Petrology; Electron Microprobe Analysis

Harris, Ron *Professor*, PhD, University of London, England, 1989. Structure; Tectonics; Mountain-Building Processes

Hudson, Samuel M. *Assistant Professor*

Keith, Jeffrey D. *Professor*, PhD, University of Wisconsin, 1982. Economic Geology; Geochemistry

Kowallis, Bart J. *Professor*, PhD, University of Wisconsin, Madison, 1981. Geologic Mapping; Geochronology

McBride, John H. *Professor*, PhD, Cornell University, 1987. Exploration Geophysics; Tectonics

Morris, Thomas H. *Professor*, PhD, University of Wisconsin, Madison, 1986. Sedimentology; Stratigraphy; Clastic Petrology

Nelson, Stephen T. *Professor*, PhD, University of California, Los Angeles, 1991. Isotope Geochemistry; Environmental Geology

Radebaugh, Jani *Associate Professor*,
PhD, University of Arizona, 2005.
Planetary Science; Volcanology

Ritter, Scott M. *Professor*, PhD,
University of Wisconsin, Madison,
1986. Invertebrate Paleontology;
Carbonate Petrology

HEALTH SCIENCE

Chair: Hanson, Carl L.

MPH Director: Lindsay, Gordon

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THE PROGRAMS OF STUDY

The mission of public health is to assure the health and well-being of populations. It is the science and art of preventing disease, prolonging life, and promoting health and efficiency through organized research and interventions. The purpose of the graduate program is to prepare students to be leaders in public health and health promotion.

Curricula in the MPH program prepares students to work with underserved and at-risk populations in various settings.

Health promotion professionals are trained in: epidemiology and biostatistics, community health analysis, health-related behavior and the behavior change process, educational processes, program planning, implementation and evaluation, environmental health, research, administration, health communication and social marketing, community mobilization, international health practice and policy advocacy.

One graduate degree is offered through the Department of Health Science: the Master of Public Health-MPH.

Public Health - MPH

The most recognized professional credential in public health practice and leadership, the Master of Public Health (MPH) is a practice-based degree that enables students to gain knowledge basic to public health. The MPH program at BYU prepares students to function as public health professionals in government, nonprofit, healthcare, and other settings; and provide leadership in the field of public health.

The average length of time required to complete the MPH program is two years, depending on course load and previous academic training or professional activity.

Requirements for Degree. (Effective Fall 2014)

- Credit hours (48): 36 hours of required courses; 6 hours of elective credits; 6 hours of field experience (300 contact hours).
- Required core courses: HLTH 600, 602, 604, 606, 607, 608, 612, 614, 615, 618, 635.
- Requirements for the field experience are determined by the student's graduate committee and are based on prior education, experience, and present professional interests.
- Examinations: certification exam (Certified in Public Health), oral exam, field experience written report.

FINANCIAL ASSISTANCE

Graduate teaching or research assistantship positions may be available for qualified students. Additional scholarships and awards are available on a competitive basis at the college and university levels.

RESOURCES AND OPPORTUNITIES

The Department of Health Science is housed in the Life Sciences Building. Students have access to graduate study labs and computer labs that house approximately 45 computers equipped with a range of software including MS Office, Internet Explorer, SAS, SPSS, and other course-specific software.

The labs also have printers and televisions with VGA and audio connections.

Most key public health journals are available to MPH students at the Harold B. Lee Library, the third best university library in the nation. Students have access to a departmental research and technology lab for research or other projects.

For a more detailed description of the graduate program requirements, send for a copy of the department's MPH brochure.

COURSE DESCRIPTION

HLTH

600. Foundations of Public Health and Health Promotion. (3)

Global perspectives of public health and health promotion. Essential public health services, public health organizations, and current issues in global health promotion.

602. Principles of Epidemiology. (3)

Principles and methods used in epidemiologic research, including study design, confounding, chance, bias, causality, and descriptive and analytic methods.

603R. Special Topics in Public Health. (1-7)

Seminar exploring current global health issues.

604. Principles of Biostatistics. (3)

Basic concepts of biostatistics and their applications and interpretation. Topics include descriptive statistics, graphics, diagnostic tests, probability distributions, inference, regression, and life tables.

606. Environmental Health Sciences. (3)

Environmental risks for human disease. Contributions of physical and biological factors and social, economic, and political determinants relative to sustainable development and promotion of health.

607. Public Health Administration. (3)

Application of management and leadership skills in public health organizations. Includes systems thinking, developing shared visions, planning, communication, staffing, directing, finance, budgeting, and reporting.

608. Determinants of Health Behavior. (3)

Psychological, social, and cultural determinants of health behavior. Introducing health behavior theories and applying behavior change models to program development.

612. Program Planning and Evaluation. (3)

Various program planning and implementation methods, theories, and skills, including needs assessment, priority setting, program development, evaluation and budgeting.

618. Survey and Research Methods. (3)

Designing, administering, and analyzing data collection instruments for research and evaluation in public health. Quantitative and qualitative methods.

619. Infections and Chronic Disease Prevention and Control. (3)

Public health solutions to the leading causes of chronic and infectious disease mortality in the United States and the world.

625. Population-Based Health Promotion Interventions. (3)

Macro- or population-based interventions, including mass communication, policy and legislation, media advocacy, social marketing, and community mobilization.

630. Small-Group Health Promotion Interventions. (3)

Micro-interventions: curriculum and the educational process, group dynamics, training models, consultation, and counseling, including theories used in health education and adult learning.

635. International Health Practice. (3)

Uses principles learned in core public health courses to develop skills in collaborating and partnering with international entities to impact health among populations with diverse cultural values, traditions, and geopolitical systems.

655. Critical Health Behaviors and Risks in Public Health. (3)

Team-taught seminar addressing six critical health behaviors and related risks pertaining to tobacco use, alcohol and drug use, injury and violence, nutrition, physical activity, and sexual risk behaviors. Be in second year of study.

688R. Field Experience. (1-6)

Domestic U.S. and international field experiences in public health settings that expose students to public health strategies and interventions in multicultural settings. HLTH 602 & HLTH 612 & HLTH 618; Hlth 600, Hlth 604, Hlth 608, Hlth 625.

691R. Mentored Research. (3-5)

Collaborating with graduate faculty of public health on mentoring grants or other health-related research and initiatives.

696R. Independent Studies. (0.5-3)

FACULTY

Barnes, Michael D. *Professor, PhD, Southern Illinois University, 1993. Health communication and social media; policy advocacy; family health*

Chaney, Robbie *Assistant Professor, PhD, University of Cincinnati, 2014. Health geography; urban bicycle safety; needs assessment; social determinants of health; health advocacy*

Cole, Eugene C. *Professor, DrPH, University of North Carolina, 1983. Environmental health, occupational health; risk assessment; biosafety; emerging and re-emerging infectious diseases; biowarfare agents; laboratory quality assurance; clinical, environmental, and genetic testing*

Crandall, Ali *Assistant Professor, PhD, Johns Hopkins University, 2014. Family Health, Executive Functioning, Poverty and Health, Adolescent/Child Well-Being*

Crookston, Benjamin T. *Assistant Professor, PhD, University of Utah, 2009. Global health; maternal and child health; nutritional epidemiology; infectious disease epidemiology*

Hall, P. Cougar *Associate Professor, PhD, University of Utah, 2008. Social norm approaches in school health education; student-teacher quality indicators; school health and community partnerships*

Hanson, Carl L. *Professor, PhD, Southern Illinois University, 1994. Health communication and social media; family health; adolescent health*

Johnston, James D. *Assistant Professor, PhD, University of Utah, 2010. Children's environmental health; infectious disease transmissions and prevention; occupational safety and health*

Lindsay, Gordon B. *Professor, PhD, Ohio State University, 1984. Substance abuse prevention; community health promotion*

Magnusson, Brianna M. *Assistant Professor, PhD, Virginia Commonwealth University, 2011. Reproductive epidemiology; unintended pregnancy; contraceptive use; social and environmental factors affecting sexual and reproductive health*

Merrill, Ray M. *Professor, PhD, Arizona State University, 1994. Cancer epidemiology; impact of advances in cancer treatment and screening tests; impact of various biases on cancer statistics*

Novilla, M. Lelinneth *Associate Professor, MD, University of the City of Manila, 1990. Family health and involving the family in health promotion; social determinants of health economics; health risk behavior; chronic diseases*

Page, Randy M. *Professor, PhD, Southern Illinois University, 1982. Adolescent health; substance abuse; global health promotion*

Sloan, Chantel D. *Assistant Professor, PhD, Dartmouth College, 2009. Medical geography, respiratory syncytial virus, asthma and cancer epidemiology, air pollution*

Thacker, Evan L. *Assistant Professor, PhD, University of Washington, 2011. Health of older adults, neurological health, cognitive function, cardiovascular health*

Thackeray, Rosemary *Professor, PhD, University of Utah, 2000. Social marketing; technology; women's health*

Thygerson, Steven M *Associate Professor*

West, Joshua H. *Associate Professor*

INFORMATION SYSTEMS

Chair: Romney, Marshall B.
Graduate Coordinator: Anderson, Bonnie B.

790 TNRB, Provo, UT 84602
(801) 422-5602

mism@byu.edu

<http://marriottschool.byu.edu/mism/>

THE PROGRAMS OF STUDY

The Information Systems Department administers one graduate program through the Marriott School: the Master of Information Systems Management-MISM.

The master of information systems management program offers a specialization in information systems and the application of information technology in business organizations based on a general background in business and accounting. The MISM degree is awarded at the completion of the professional program, which can begin as early as the senior year of the bachelor of information systems program and culminates in the Marriott School after the fifth year of study. Students who enter the MISM program with a baccalaureate degree in information systems can complete the program in two years or less.

The objective of the MISM program is to develop graduates who exhibit professionalism and are qualified with specialized knowledge in information system areas. The department seeks to educate individuals who are: (1) imbued with a strong sense of professional commitment, (2) qualified with specialized knowledge in the areas of information systems, (3) committed to continued professionalism beyond formal education, and (4) capable of becoming leaders who exhibit high standards of ethical conduct within their chosen profession.

The department admits approximately 60 students per year into its graduate program Information Systems Management - MISM.

Information Systems Management - MISM

The MISM program is designed for students who want professional careers in information systems. Students seek employment with consulting firms, accounting firms, industrial organizations, and not-for-profit entities performing a variety of services, such as understanding the information needs of an organization, designing, developing, and implementing information systems to meet specified requirements, administering the information systems function, auditing an information system, and formulating an information systems master plan to effectively utilize information technology throughout an organization.

Requirements for the MISM Degree.

- Marriott School common requirements: Bus M 530, 540, 581, 583
- MISM requirements: IS 531, 550, 551, 552; 555, 560, 562; 21 elective hours from any approved MSM courses not already selected or from other courses as approved by the graduate program coordinator.

FINANCIAL ASSISTANCE

The Information Systems Department utilizes the Marriott School's financial aid provisions. Qualified students can receive aid from the following: the Marriott School Scholarship Fund, private scholarship donations, assistantship awards, and loan assistance.

Scholarships. The Marriott School of Management offers scholarships to Marriott School students through the college, departments and programs. One application online at <http://marriottschool.byu.edu/scholarship/> allows students to apply for all scholarships the Marriott School offers.

Assistantships. Research and teaching assistantships are available for qualified second-year students.

Loans. Several loans are available for Marriott School students:

- Marriott School Loans: available to full-time Marriott School day students. Marriott School loans are handled on an individual basis, dependent on financial need and standing within the participating program.
- BYU Short-Term Loans: available for up to the cost of tuition only.
- Federal Stafford Loans: subsidized by the U.S. government. Not available for international students.

More information on and applications for these loans are available from the BYU Financial Aid Office, A-153 ASB, (801) 422-4104, e-mail: financial_aid@byu.edu.

RESOURCES AND OPPORTUNITIES

The N. Eldon Tanner Building. The Tanner Building, which houses the Marriott School, is one of the finest facilities of its kind. The original building, with a dramatic seven-story atrium, was recently updated with a new four-story addition. The addition boasts thirty-nine team study rooms, six large case rooms, the Blue Line Deli, and adds 76,000 square feet to the existing building.

The Marriott School of Management. The Marriott School is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication, and they fill leadership positions in a number of national professional organizations. The school has developed innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice. This is accomplished, in part, through the Marriott School's National Advisory Council.

National Advisory Council.

Consisting of more than 160 prominent business and government executives, the National Advisory Council lends major support to the Marriott School. Students benefit by interacting with council members in special campus lectures and seminars and by visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.

The Executives on Campus Program.

This program gives students an opportunity to interact with distinguished business and government leaders who come to campus. These executives visit classes and meet with student organizations as well as participate in the Executive Lecture Series and Entrepreneurship Lecture Series.

COURSE DESCRIPTION

IS

515.Spreadsheets for Business Analysis. (3)

Using spreadsheets to support business analysis and decision making. Includes sensitivity analysis, pivot tables, introductions to databases, and macros, charting, and similar topics. IS 201 or equivalent.

520.Business Programming and Spreadsheet Automation. (3)

Programming in Excel Visual Basic; automating common tasks; retrieving data from web servers; building optimization models and user forms. IS 201 or equivalent or instructor's consent.

531.Enterprise Infrastructure. (3)

Principles of IT enterprise infrastructure management, including platform choices, functionality, cost, security, deployment, controls, flexibility, and adaptability.
Admission to MISM program; IS 404 or equivalent.

533.Advanced Data Communications. (3)

Design, management, and strategic use of local area networks (LANs), wide area networks (WANs), intranets, and the Internet to solve business problems.
IS 404 or equivalent.

537.Data Structures and Algorithms. (3)

Programming concepts for IS majors pursuing careers in software development. Concepts include lists, stocks, queue, maps, and other structures; sorting and other algorithms; and recursion.
IS 403

540.Spreadsheet and Database Automation Programming. (3)

Automating spreadsheets in Excel, interacting with password-protected web sites, writing code to conduct simulations, solving common database interface problems in Access, etc.
IS 202 or C S 142; or equivalent; or instructor's consent.

542.Web Development. (3)

Web development techniques, including server-side and client-side processing, database integration, and advanced browser techniques.
IS 403 or equivalent.

543.Mobile Platform Development. (3)

Principles of mobile platforms. Application development for mobile platforms such as smart phones and tablets. Emphasizing user experience and business analytics for management decisions.
IS 413 or equivalent.

550.MISM Capstone Introduction. (0.5)

Presentations by faculty and professionals to make students aware of latest developments in the field and help them prepare a capstone project proposal.
Final year in MISM.

551.User Experience Design and Technical Leadership. (3)

Leadership in a technical field, and user experience design in the context of web and mobile application development.
Admission to a Marriott School graduate program.

552.MISM Capstone Project. (3)

Development and completion of capstone project integrating information systems knowledge previously gained in the MISM program
Admission to MISM.

555.Data Mining for Business Intelligence. (3)

Computation of business intelligence from data resources within modern organizations using data mining.
Admission to a Marriott School graduate program; introductory statistics.

560.Information Security Management. (3)

How technology, organizations, and people interact to create secure information systems. Topics include data encryption, physical security, information security policies, and security awareness and training.
I Sys 404 or equivalent.

562.Project Management. (3)

Principles and skills of project management in an information systems context, including management of risk, schedule, scope, cost, quality control, communications, human resources, and procurement.
Admission to a Marriott School graduate program.

565.Digital Forensics for Organizations. (3)

Digital forensics from an organizational perspective, covering the three functions of digital forensics performed by businesses: employee abuse investigations, incident response, and electronic discovery.
I Sys 404 or equivalent.

566.Advanced Database Management. (3)

Advanced data modeling; use of triggers and stored procedures; extracting, transforming and loading data from transaction systems to analytical systems; introduction to data warehouses; introduction to NoSQL.
IS 402

571.Introduction to Academic Research in Information Systems. (3)

Conducting academic information systems research, including philosophy of science, causality, validity, research proposal development, and research methods.
Admission to MISM program; instructor's consent.

572.Structural Equation Modeling. (3)

Science and theory; constructs and measurement; surveys and experiments; data screening; human subjects protocols (IRB); factor analysis; model fit; academic writing.
IS 571; Instructor's consent.

590R.Managing a Software Startup. (3)

590R.Computer Forensics. (3)

590R.Seminar in Information Systems. (3)

Special topics by announcement.

590R.User-Centered Interface Design. (3)

590R.Network Administration. (3)

590R.Android Mobile Development. (3)

INSTRUCTIONAL PSYCHOLOGY AND TECHNOLOGY

599R.Academic Internship: Information Systems. (0.5-3)

Approved on-the-job experience. Applying classroom theory and technology to actual problems; exploring career opportunities; learning role of information systems in business environment. Admission to Marriott School graduate program; departmental consent.

693R.Readings and Conference. (0.5-3)

In-depth study one-on-one with chosen professor on topic of mutual interest not currently covered in an existing course. MISM director's consent.

FACULTY

Albrecht, Conan *Associate Professor*, PhD, University of Arizona, 2000. Distributed Group Support Systems; Computer-Aided Fraud Detection

Allen, Gove *Associate Professor*, PhD, University of Minnesota, 2001. Database Management; Conceptual Modeling

Anderson, Bonnie B. *Associate Professor*, PhD, Carnegie Mellon University, 2001. Information Systems; Change Management

Dean, Douglas L. *Associate Professor*, PhD, University of Arizona, 1995. Systems

Liddle, Stephen W. *Professor*, PhD, Brigham Young University, 1995. Software Development; Data Extraction; Conceptual Modeling

Meservy, Rayman D. *Associate Professor*, PhD, University of Minnesota, 1985. Audit; Information Systems

Romney, Marshall B. *Professor*, PhD, University of Texas, Austin, 1977. Accounting Information Systems; Fraud

Vance, Anthony *Assistant Professor*, PhD, Georgia State University, 2009. Information Security; Trust and Information Systems; Internal Control

INSTRUCTIONAL PSYCHOLOGY AND TECHNOLOGY

Chair: Graham, Charles
Graduate Coordinator: Yanchar, Stephen

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iptsec@byu.edu
<http://education.byu.edu/ipt>

THE PROGRAMS OF STUDY

Instructional Psychology and Technology is a branch of educational study concerned with the ideas, principles, and theories related to the improvement of learning. Students of instructional psychology and technology seek to identify and implement improvements in instruction while endeavoring to understand the principles that govern these improvements. These solutions are implemented in educational settings in public schools and universities, business, industry, the government, the military, the community, and the church.

The objective of the Department of Instructional Psychology and Technology is to enhance learning by improving instruction and teaching. In partnership with others, the department will (1) search for knowledge that improves instruction, (2) apply knowledge and technology to solve instructional problems, and (3) empower students with knowledge and skills in instructional development, research, evaluation, and measurement.

Students in each degree program are required to take basic courses in the following areas of disciplined inquiry in instruction: design and development, research, measurement, and evaluation. They are also required to acquire collateral tools from other disciplines such as statistics, computer science, human resource management, and communications. Specialized courses are offered to deepen the candidate's knowledge and theoretical

sophistication. Professional skills are developed through extensive project and internship experiences offered in the schools, church, home, and community.

The Department of Instructional Psychology and Technology offers two degrees: Instructional Psychology and Technology-MS and Instructional Psychology and Technology-PhD.

Approximately thirty students are enrolled in the MS program and fifty students in the PhD programs. Full-time MS students should be able to complete an MS degree within approximately two years; full-time PhD students with an MS in instructional psychology and technology should be able to complete the PhD within three years.

Master's and doctoral students in other departments wishing to take a minor in Instructional Psychology and Technology should counsel with the instructional psychology and technology faculty member appointed to their graduate committee in selecting the appropriate courses (9 hours of course work required for a master's minor, 12 hours for a doctoral minor).

Instructional Psychology and Technology - MS

The MS program prepares students to assume professional positions in instructional design and evaluation or to pursue a doctorate in these fields. All MS students will be required to complete at least 6 credit hours each fall and winter semester to remain enrolled in the program.

Requirements for Degree

Credit hours (minimum 36): 30 course work hours plus 6 thesis hours (IP&T 699R) or 6 project hours (IP&T 698R).

Prerequisite (3 hours): IP&T 510-Academic Writing and Argumentation, or ENGL 316.

Required courses (19 hours): IP&T 520, 560 or 651, 564, 629, 652, 661.

- Emphasis: 7 hours to be determined in consultation with graduate committee.

Internship: 3 hours (IP&T 599R).

Seminar: 1 hour (IP&T 690R).

Thesis: 6 hours (IP&T 699R); or project: 6 hours (IP&T 698R).

- Examinations: oral defense of thesis or project.

FINANCIAL ASSISTANCE

Financial assistance is available mainly in the form of paid internships through the Instructional Psychology and Technology Department, other departments within the university, and various agencies external to the university. Limited funds are available for partial tuition scholarships for students with emergency financial needs. Other financial aid is available through the university.

RESOURCES AND OPPORTUNITIES

Instructional Psychology and Technology utilizes the David O. McKay Education Building for the majority of its classrooms and resource centers.

The school and department provide extensive computer and multimedia facilities for student use. Macintosh and Windows computers are available in various computer laboratories. Most of these computers are connected to the university broad-band network, which provides convenient access to a large number of computer-based software tools, such as SPSS and SAS statistical analysis programs, and extensive online library research tools.

For a more detailed description of the graduate program requirements, see the department Web site at <http://education.byu.edu/ipt>

COURSE DESCRIPTION

IP&T

510.Scholarly Writing and Argumentation. (3)

A prerequisite course designed to help improve students' scholarly writing and argumentation. Students work together to strengthen their skills in these areas by analyzing sources from the scholarly literature, completing writing assignments, offering feedback on other students' work, receiving feedback on their own, and completing a course project.

514R.Special Topics in Instructional Psychology. (0.5-3)

Topics vary. Topics may include technical applications, effective teaching, student assessment.

515R.Authoring Tools. (0.5-3)

A project-based approach to learning to use both industry-standard and cutting-edge authoring tools. Building practical skills and experience.

515R.Special Topics in Instructional Psychology and Technology. (0.5-3)

Becoming more familiar with key issues in the field of instructional psychology and technology.

520.Foundations of Instructional Technology. (3)

Introduction to instructional psychology and technology theory and practice: psychological foundations of human performance technology and learning sciences. Current research issues, professional organization of the field, and ethical issues.

560.Instructional Product Development. (3)

Designing, programming, and debugging a learning product using a high-level computer language.

564.Instructional Design. (3)

Identifying instructional problems; specifying objectives, instructional strategies, and media; analyzing learning outcomes; developing instructional materials and assessment instruments; validating instructional systems.

599R.Academic Internship. (0.5-6)

Practicing skills learned and receiving evaluation and feedback from internship sponsors. Departmental consent.

620.Principles of Learning. (3)

Improving classroom learning through understanding underlying psychological principles and theories.

629.(IP&T - CPSE) Introduction to Research. (3)

Introduction to the design options available for conducting basic and applied research and how to read and write research reports. Quantitative, qualitative, and mixed methods along with ideas for protecting human subjects are discussed.

638.Research in Blended and Online Learning Environments. (3)

Introduction to major research problems, questions, and theories that have been investigated in blended and online learning. Exploration of current inquiry questions and methods used to conduct research in blended and online learning environments.

651.(IP&T - CPSE) Statistics 1: Foundations. (3)

Emphasis on conceptual understanding and practical application of descriptive and basic inferential statistics to decision making.

652.Assessing Learning Outcomes. (4)

Selecting and constructing instruments and procedures for assessing affective, behavioral, and cognitive outcomes of education.

INSTRUCTIONAL PSYCHOLOGY AND TECHNOLOGY

653.(IP&T - CPSE) Qualitative Research 1 (Intro to Qualitative Research). (3)

Provides an introduction to qualitative inquiry in education, emphasizing major assumptions of qualitative research, a survey of prominent qualitative approaches, differences between various qualitative approaches and more traditional qualitative strategies, and practice with basic qualitative research skills such as interviewing, transcription, data analysis, and report writing.
IP&T 629

654.Computers in Educational Measurement. (0.5-4)

Types of computerized measurement and assessment methods and item forms, as well as their development, delivery, and statistical theory.
IP&T 652 or instructor's consent.

655.Instructional Print Design and Production. (2)

Theoretical and practical principles of designing interfaces for all instructional forms, including message design, representation design, and control design.

657R.Measurement Project. (0.5-3)

Designing, conducting, and reporting a comprehensive measurement project.
IP&T 652, Stat 510; or equivalents.

661.Introduction to Evaluation in Education. (3)

Introduction to the nature, purposes, and functions of educational evaluation in making judgments about teachers, instructional materials, academic programs, curricula, and school systems.

664.Advanced Instructional Design. (3)

Advanced laboratory in instructional system design, production, formative evaluation, packaging, and implementation. Systematic critical analysis of all phases of development.
IP&T 564

665.Instructional Visual/Video Production. (4)

Designing, producing, and integrating audio, visual, and video instructional materials. Applying digital and other technologies in audio recording and mixing, and photographic and video production.

667R.Evaluation Project. (0.5-3)

Designing, conducting, and reporting a comprehensive project in evaluation.
IP&T 661

674R.Quasi-Experimental Studies. (0.5-3)

Critiquing causal claims; planning causal probing studies.

677R.Research Project. (0.5-3)

Designing, conducting, and reporting a comprehensive project in research.

682.Project and Instructional Resource Management. (3)

Managing research, development, and evaluation projects in public schools and higher education. Planning, budgeting, supervising, managing personnel, and scheduling.

687R.Development Project. (0.5-3)

Designing, conducting, and reporting a comprehensive project in development.
IP&T 564

690R.Seminar. (0.5-3)

Developing a greater understanding of the theories, practices, and trends in the discipline through presentations from disciplinary leaders.

692R.Advanced Topics. (0.5-3)

Developing increased understanding and competency in a specific area of instructional psychology and technology through focused learning of a narrow topic.

693R.Directed Individual Study. (0.5-3)

Improving understanding of a focused topic through mentored inquiry and completion of related writing or design activities. Instructor's consent.

698R.Master's Project. (0.5-6)

Making a significant contribution to the advancement of theory, research, and/or practice through a successful development, implementation, and evaluation or critique of an evaluation, measurement, research, or design project.

699R.Master's Thesis. (0.5-6)

Making a significant contribution to the advancement of theory, research, measurement, and/or practice through proposing, implementing, and writing a research study.

730.(IP&T - CPSE) Hierarchical Linear Modeling. (3)

Conceptual and applied processes in hierarchical linear modeling with cross sectional nested data and longitudinal repeated measures data.
IP&T 651 & IP&T 745

745.(IP&T - CPSE) Statistics 2: Multiple Regression. (3)

An examination of multiple regression as an inferential statistical procedure in its own right and as a foundation for subsequent courses in structural equation modeling, path analysis, and factor analysis.
IP&T 629 & IP&T 651

747.(IP&T - CPSE) Structural Equation Modeling. (3)

Examination of Structural Equation Modeling with expressions in Path Analysis, Confirmatory Factor, and Latent Variable Modeling.
IP&T 651 & IP&T 745

750.Literature Review and Synthesis. (3)

Strategies, methods, and habits for writing and publishing effective critical literature reviews. Students must already have a research topic selected, defined narrowly enough to do meaningful inquiry, and approved by their advisor before taking the course.

IP&T 629 and selection of research topic.

752.Measurement Theory. (3)

Classical and modern models for measuring human attributes. Issues related to reliability, validity, item selection, scoring, standard setting, and test equating. Use of item response theory and generalizability theory.

IP&T 651 & IP&T 652

753R.(IP&T - CPSE) Qualitative Research 2 (Advanced). (3)

An in-depth exploration of qualitative research approaches and data analyses. Options include AR/PAR/Self-Study/Narratives; Hermeneutics, Phenomenology; Ethnography/Case Study; Grounded Theory; emerging methods.

IP&T 653

754.Item Response Theory. (3)

Concepts, models, and assumptions in IRT, including trait and parameter estimation, scale properties, assessment of model fit, and the use of computer software. Emphasizes applications of IRT to practical testing problems including test construction and revision, adaptive testing, differential item functioning, score equating, vertical scaling, and model-based diagnostic assessment.

IP&T 752

760R.Advanced E-Learning Development. (3)

Team-based development of an instructional product for a local client.

IP&T 560

761.Advanced Evaluation in Education. (3)

Assumptions, theories, practices, and problems associated with educational evaluation.

IP&T 661

789.(IP&T - CPSE) Meta Analysis. (3)

An overview of qualitative research synthesis, methods for systematic literature reviews and meta-analysis. A balanced approach between conceptualization and application with practice using existing data sets and statistical packages.

IP&T 629 & IP&T 651

790R.Advanced Seminar. (0.5-3)

Acquiring advanced understanding within a specialized domain of instructional psychology and technology through experiences with guest lecturers and experts in the domain.

799R.Doctoral Dissertation. (0.5-9)

Formal report and defense of a substantive research topic designed to make an original contribution to knowledge in the field.

Completion of skill and project requirements.

FACULTY

Davies, Randall S. *Assistant Professor*, PhD, Brigham Young University, 2002. Program Evaluation & Assessment; Technology Integration; Educational Data Mining & Learning Analytics

Graham, Charles R. *Professor*, PhD, Indiana University, 2002. Blended and Online Learning; Technology-Mediated Teaching and Learning

Kimmons, Royce M. *Assistant Professor*, PhD, The University of Texas, Austin, 2012. Technology Integration; Open Education; Social Networks; Data Mining

Larsen, Ross A. *Assistant Professor*, PhD, Texas A&M, 2014. Common Methodological Social Science Issues and Comprehensive Structural Equation Modeling

McDonald, Jason K. *Associate Teaching Professor*

Rich, Peter J. *Associate Professor*, PhD, University of Georgia, 2007. Game-Based Learning; Computational Thinking; Video Analysis

Sudweeks, Richard R. *Professor*, PhD, University of Illinois, 1978. Educational Measurement and Evaluation

West, Richard E. *Associate Professor*, PhD, University of Georgia, 2009. Communities of Innovation; Program Evaluation; Creativity, K-16 Technology Integration; Online Collaborative Learning

Yanchar, Stephen *Associate Professor*, PhD, Brigham Young University, 1997. Instructional Design Practices; Agency in Education; Qualitative Research Methods

LANGUAGE STUDIES, CENTER FOR

Director: Clifford, Ray T.
Graduate Coordinator: Bown, Jennifer

3086 JFSB, Provo, UT 84602-6715
(801) 422-5199
clsgradsec@byu.edu
<http://slat.byu.edu/>

THE PROGRAMS OF STUDY

The Center for Language Studies offers a college-wide M.A. degree in Second Language Teaching (SLaT). It is anticipated that eight to ten students would be admitted into the SLaT program each year. Students are admitted to the program with a specific language emphasis, provided that there is a graduate faculty member in the target language who can serve as thesis advisor. It will normally take four semesters for a student to complete the program.

Second Language Teaching (SLaT) -- MA

The SLaT MA program is ideally suited to the needs of individuals who have completed undergraduate degrees in foreign languages and have an interest in teaching their acquired language in an advanced educational setting, such as in a college or university or in a business enterprise. The SLaT MA is not a public school certification program, but the program will be beneficial to currently certified foreign language teachers as part of their continuing professional development or as preparation to pursue a Ph.D. in foreign language education.

Second Language Teaching (SLaT) - MA

The SLaT MA program uniquely prepares students with second language teaching skills that are based on sound teaching theories that build on and go beyond the scientific study of language. The focus is on teacher preparation, which is in great demand in today's

society. This master's program will assist second- and foreign-language teachers in improving their professional qualifications and advance in their profession. There is a specific need for teachers who are prepared to teach less commonly taught languages; this program helps to satisfy this need. The SLaT program also prepares students for continued study in Ph.D. programs in foreign language education and eventual entry into academia.

Requirements for Degree

Credit hours (33): Master's Thesis Option (699R) - minimum 27 course work hours and 6 thesis hours or Master's Project Option (698R) minimum 30 course work hours and 3 project hours.

- Required Core Courses: SLaT 601, 602, 603, and 604 (12 credits) plus 3 additional courses from the following: SLaT 610, 611, 612, 613, or 614 (9 credits).
- Elective courses (6 credits):
- 3 credits of a graduate-level language, linguistics, or literature course of the language of emphasis.
- 3 credits of a graduate-level language-specific course or an additional graduate-level pedagogy course (see required core courses listed above).
- Examinations: (A) Written comprehensive exam covering student's coursework and reading list. (Students are required to take this exam during the fourth semester of study.) (B) Oral defense of thesis or project.

FINANCIAL ASSISTANCE

Partial tuition scholarships are available. Applicants may also contact directly the department of their language of emphasis to apply for teaching assistantships.

RESOURCES AND OPPORTUNITIES

Teaching Opportunity: Students in the SLaT program will typically have the opportunity to teach one or more classes in their language of emphasis. If such an opportunity is not offered through the student's language department, students are strongly encouraged to gain teaching experience in another second language teaching setting.

Office of Digital Humanities:

Students in the Second Language Teaching program may utilize facilities in the HLR for computer-assisted language instruction and research.

The Foreign Language Student

Residence: Students who desire a more intensive language study experience and practical application of the language under the direction of faculty and native residents may apply to live in the FLSR. All activities in the individual apartments in the residence are conducted in the foreign language. Housing is available for men and women in Arabic, Chinese, French, German, Italian, Japanese, Portuguese, Spanish, and Russian languages. Graduate students may participate in this program as students or as native speaker resident facilitators.

For a more detailed description of the graduate program requirements, send for a copy of the handbook.

COURSE DESCRIPTION

SLAT

601. Survey of Second Language Teaching and Acquisition: Theory and Practice. (3)

Research in second language teaching; theories of language learning; historical trends and current practices and issues in language education.

602.Linguistics for Language Teachers. (3)

In-depth knowledge of language systems, i.e., phonology, morphology, syntax, semantics, and pragmatics.

603.Conducting Research in Second Language Teaching. (3)

Reviewing, understanding, and evaluating published research; designing quantitative and qualitative research studies; using basic statistical procedures for analyzing data; writing a research prospectus conforming to APA style guidelines.

604.Assessing Language Skills. (3)

Purposes and uses of various forms of assessment; development of tests, surveys, questionnaires, and alternative forms of assessment; evaluation of the quality of assessments.

610.Using Media and Technology in Second Language Teaching and Research. (3)

Using and applying various types of media and technology appropriate for second language teaching, learning, and research.

611.Teaching Listening and Speaking Skills. (3)

Theory and research on teaching and learning listening and speaking skills; applying professional guidelines on listening and speaking; selecting and using appropriate techniques for teaching and assessing oral skills.

612.Teaching Reading and Writing Skills. (3)

Theory and research on teaching and learning reading and writing skills; applying professional guidelines on reading and writing; selecting and using appropriate techniques for teaching and assessing literacy skills.

613.Teaching and Learning About Culture. (3)

Role of culture in second language courses; current theory and research on culture teaching and learning; techniques for teaching and assessing culture.

614R.Seminar in Second Language Teaching. (3)

Topics vary. In-depth discussion about issues relating to second language learning, teaching, and research.

680R.Directed Studies. (1-3)

Individualized studies in language of emphasis, directed by a faculty member. Research paper required.

698R.Master's Action Research Project. (1-3)

Design, production, and evaluation of MA action research project in the student's language of emphasis.

699R.Master's Thesis. (0.5-6)

Includes a review of the research literature and a report on the research study. Thesis students are encouraged to work with faculty members in their areas of research.

FACULTY

Bateman, Blair *Associate Professor*, PhD, University of Minnesota, 2002. Foreign Language Teaching Methods; Teaching Culture; Teaching Heritage Languages; Preparation and Development of Public School Teachers; Language Assessment

Bell, Teresa *Assistant Professor*, PhD, University of Arizona, 2001. Second Language Acquisition; Foreign Language Pedagogy; German Sociolinguistics

Belnap, Kirk *Professor*, PhD, University of Pennsylvania, 1991. The Teaching of Arabic as a Second Language; Language Policy and Planning; Sociolinguistics; The History of Arabic; L1 and L2 Literacy

Bourgerie, Dana *Professor*, PhD, Ohio State University, 1991. Sociolinguistics; East Asian Languages; Chinese Language Acquisition and Assessment

Bown, Jennifer *Associate Professor*, PhD, Ohio State University, 2004. Slavic Linguistics and Second Language Acquisition

Christensen, Matthew *Professor*, PhD, Ohio State University, 1994. Chinese Linguistics and Pedagogy; Chinese Culture and Communication Analysis

Clifford, Ray *Associate Dean; Professor*, PhD, University of Minnesota, 1977. Language Testing and Technology; Teaching Methodology; Second Language Education

Cox, Troy L *Assistant Professor*

Damron, Julie *Assistant Professor*, PhD, Purdue University, 2000. Linguistics; TESL; Language Learning; Second Language Teaching Methods; Korean Language Education

Dewey, Dan *Associate Professor*, PhD, Carnegie Mellon University, 2001. Language Assessment; Second Language Acquisition

Eggington, Bill *Professor*, PhD, University of Southern California, 1985. Sociolinguistics; Contrastive Rhetoric

Erickson, Robert *Assistant Professor*, PhD, Brigham Young University, 2000. Second Language Acquisition Theory and Assessment; Language Teaching Methodology

Henrichsen, Lynn *Professor*, EdD, University of Hawaii, 1987. Cultural and Comparative Education; Language Teaching Methodology

Kelly, Michael Ray *Associate Professor*

Knapp, Nieves *Associate Teaching Professor*, PhD, University of Oviedo Spain, 2003. Foreign Language Teaching Methodology and Pedagogy; Cultural and Conversational Spanish

Lundberg, Grant *Professor*, PhD, University of Kansas, 1999. Slavic Languages and Literature; Historical Linguistics; Slavic Dialectology

Martinsen, Rob *Associate Professor*, PhD, University of Texas, 2007. Foreign Language and Culture Education; Study Abroad Language Acquisition; Language Technology in Education

Montgomery, Cherice *Assistant Professor*, PhD, Michigan State University, 2009. World Language Education; Pedagogy; Curriculum Development; Transliteracy and Social Technologies; Teacher Preparation

Moody, Stephen *Assistant Professor*, PhD, University of Hawaii, 2014. Quantitative Sociolinguistics; Language and Culture, Computer-Assisted Language Learning (CALL); Japanese Pragmatics and Pedagogy

Parkinson, Dilworth *Professor*, PhD, University of Michigan, 1975. Arabic Corpus Linguistics; Sociolinguistics and Teaching of the Arabic Language

Sememoe, Wendy *Associate Professor*, PhD, University of Illinois, 2002. Linguistics; Research Design; Second Language Acquisition and Teacher Evaluation

Smith, Laura *Associate Professor*, PhD, University of Wisconsin, 2004. Germanic and Theoretical Linguistics; Phonetical Feature Acquisition

Tanner, Mark *Assistant Professor*, PhD, University of Pennsylvania, 1991. Pronunciation Pedagogy; Second Language Acquisition and Methods

Thompson, Greg *Associate Professor*, PhD, University of Arizona, 2006. Spanish Language Pedagogy; Phonetics; Spanish Language Acquisition and Development

Warnick, Paul *Associate Professor*, PhD, Ohio State University, 1996. Japanese Language Pedagogy; Sociolinguistics; Pre-modern Japanese; Issues in Reading Japanese

Watabe, Masakazu *Professor*, PhD, University of Southern California, 1978. Japanese Linguistics and Pedagogy; Materials Development

LAW SCHOOL, J. REUBEN CLARK

Dean:

Rasband, James R. *Associate Dean:*

Scharffs, Brett G. *Associate Dean:*

Moore, David

H.243 JRCB, Provo, UT 84602-8000
(801) 422-7871

admissions@law.byu.edu
<http://www.law2.byu.edu/>

THE PROGRAMS OF STUDY

Students admitted to the highly competitive programs of the Law School receive a breadth and depth of training that prepare them to function in the wide range of activities that occupy the professional lawyer's life. Students gain firsthand experience with a variety of teaching and learning methods, among them Socratic or inductive teaching, problem solving, seminars, individual research, and clinical experience.

The specific objective of the curriculum is to maximize the student's mastery of legal reasoning and legal method-in addition to teaching a core of the basic substantive rules of law and imparting an appreciation for its institutions and traditions.

Students are taught to analyze complex factual situations; to separate the relevant from the irrelevant; and to reason inductively, deductively, and by analogy. Students are also schooled in the arts of written and oral advocacy.

Two degrees are offered through the J. Reuben Clark Law School: Law-JD and Comparative Law-LLM. The university has also approved programs whereby qualified students can obtain a concurrent master's degree in business administration, public administration, accountancy, education, or public policy while pursuing a law degree.

The Law School seats approximately 140 students each year in its first-year class. The juris doctorate (JD)

may be completed no earlier than five fall or winter semesters and no later than sixty months after a student has begun law study at an ABA-approved law school. The LLM students receive their degree on completion of 24 credit hours earned during at least two semesters in residence.

Joint Law Degrees - MBA/MPA/MAcc/MEd

Joint Law and Management Degrees-JD/MBA, JD/MPA, and JD/MAcc

The Law School and the Marriott School of Management have approved arrangements whereby qualified students may earn joint degrees from the two schools in four years of full-time graduate study. Students may earn a juris doctor (JD) degree and either a master of business administration (MBA), master of public administration (MPA), or master of accountancy (MAcc) degree.

Candidates must satisfy the admission requirements for and be admitted to each program separately.

Joint Law and Master of Education Degree-JD/MEd

The Law School and the McKay School of Education have approved arrangements whereby qualified students may earn a joint degree from the two schools. Students may earn a juris doctor (JD) degree and a master of education (MEd) degree. Candidates must satisfy the admission requirements for and be admitted to each program separately.

FINANCIAL ASSISTANCE

Some scholarship and loan funds are available to law students. Those interested in these opportunities should inquire at the Law School Admissions Office and the BYU Financial Aid Office.

Tuition. Since a significant portion of the cost of operating the Law School comes from the tithes of The Church of Jesus Christ of Latter-day Saints, students and the families of students who are tithe-paying members have already made a significant contribution to the university and are thus charged a lower tuition than nonmembers. This disparity is similar to the higher tuition charged by law schools of state universities to nonresidents.

Annual tuition: \$11,620 LDS

\$23,240 non-LDS

RESOURCES AND OPPORTUNITIES

J. Reuben Clark Law School Building. The J. Reuben Clark Law School building is located near the eastern edge of campus. Its five floors house classrooms with electrical connectivity to each student seat, wireless capabilities from all locations within the building, faculty offices, and the law library.

Howard W. Hunter Law Library. The Howard W. Hunter Law Library is one of the leading law libraries in the country and contains an extensive collection of legal materials in both print and electronic format. In addition to offering the latest in technological facilities and services, the library also provides individual study carrels with hookups for computer access to networks, as well as study rooms for group use. Law students also have access to the holdings in the university library, the Harold B. Lee Library.

Cocurricular Programs. Law students publish the Brigham Young University Law Review, the BYU Journal of Public Law, the Brigham Young University Education and Law Journal, and the BYU International Law and Management Review. Law students also participate in the Moot Court Board of Advocates and Trial Advocacy programs.

Externship Program. This program offers an opportunity for students to participate in practical training with private law firms, the judiciary, governmental offices, or international regional offices of legal counsel for The Church of Jesus Christ of Latter-day Saints in many foreign nations.

Student Organizations. Within the Law School, students may participate in a number of organizations, among them the Student Bar Association, the Alternative Dispute Resolution (ADR) Society, the American Constitution Society for Law and Policy (ACS), the Black Law Students Association (BLSA), the Family Law Society, the Federalist Society, the Government and Politics Legal Society (GPLS), the Immigration Law Forum, the International Law Student Association (ILSA), Jail Outreach, Law Cycling Club (Legal Spin), the Minority Law Student Association (MLSA), the Native American Law Student Association (NALSA), the Natural Resources Law Society, Phi Delta Phi, the Public Interest Law Foundation (PILF), Real Estate Law Society, Running Objection, the Student Intellectual Property Law Association (SIPLA), the Sports and Entertainment Law Society (SpEnt), and Women In Law (WIL). For spouses of married law students there is Law Partners, and for single law students there is the Law Singles Society. Many law students also participate in the 5th Grade Mentoring Program.

COURSE DESCRIPTION

LAW

505.Torts. (4)

Study of the judicial process in civil actions for damages or equitable relief for physical, appropriational, and defamatory harms to personality, property, and relational interests, with some consideration of alternative reparation systems such as workers' compensation. Admission to law school.

510.Contracts. (4)

Examination of the promises enforced by law, and the nature of the protection given. Inquiry made into the formation, performance, and discharge of contracts; their assignment, termination, and modification; and the variety, scope, and limitations on remedies. Attention will be given to Article 2 of the Uniform Commercial Code. Admission to law school.

515.Civil Procedure. (4)

A basic study of the operation of courts, including an introduction to the organization of state and federal courts and relationships between them. Topics studied will include jurisdiction over persons, things, and subject matter; venue; the scope of litigation as to claims, defenses, and parties; pleading, pretrial motions, discovery, and pretrial conferences; trials and the functions of judges, juries, and lawyers; appeals and the role of appellate courts; and the enforcement and finality of judgments and decrees. Admission to law school.

520.Property. (4)

Inquiry into the nature of "property" and "ownership" of land and structures on land and the ways in which ownership may be established, restricted, transferred, and divided among various persons. Admission to law school.

525.Criminal Law. (3)

Problems in defining what conduct should be subjected to criminal penalties; the limitations of criminal law as a means for prevention and control of undesirable conduct. Admission to law school.

530.Structures of the Constitution. (3)

The Constitution's distribution of sovereign power between the federal government and the states; its allocation of federal sovereign power among Congress, the president, and the judiciary. Admission to law school.

535.Legislation and Regulation. (3)

Introduction to lawmaking in the modern statutory and administrative state. Examining the way Congress and administrative agencies adopt binding rules of law (statutes and regulations, respectively) and the way the implementing institutions - courts and administrative agencies - interpret and apply these laws. Considering the theories and justifications behind modern legislative and regulatory behavior, the incentives that influence the behavior of various actors, and the legal rules that help structure the relationships among Congress, the agencies, and the courts. Admission to law school.

545.Introduction to Legal Research and Writing. (3)

Introduction to tools and techniques essential to law practice and legal scholarship: legal analysis, research using print sources, and objective writing. Student will write three predictive office memoranda based on library research and complete a series of legal research quizzes and a legal research final exam. Admission to law school.

546.Introduction to Advocacy. (2)

Focuses on appellate legal writing and oral advocacy. Student will prepare an appellate brief and orally argue the case. Also includes training for online legal databases and introduction to administrative law and legislative history research. LAW 545; Admission to law school.

549.Professional Seminar. (0.5)

Integrating religious and moral values into a model of legal professionalism; issues regarding legal education, the legal system, the practice of law, and the roles of lawyers. Admission to law school.

550.Professional Development Lecture Series 1. (0.5)

This course is specifically designed to assist law students in determining which career path they want to pursue. Each session features a different practicing attorney who will discuss the nuts and bolts of practicing law in areas such as real estate, law office management, part-time employment options, tax, bankruptcy, international corporate law, alternative dispute resolution, family law, natural resources and environmental law, personal injury, medical malpractice, law school teaching and administration, intellectual property, immigration, and employment law. Different specialties will be featured each semester, so students may register for both the fall and winter lecture series. Admission to law school.

551.Professional Development Lecture Series 2. (0.5)

This course is specifically designed to assist law students in determining which career path they want to pursue. Each session features a different practicing attorney who will discuss the nuts and bolts of practicing law in areas such as real estate, law office management, part-time employment options, tax, bankruptcy, international corporate law, alternative dispute resolution, family law, natural resources and environmental law, personal injury, medical malpractice, law school teaching and administration, intellectual property, immigration, and employment law. Different specialties will be featured each semester, so students may register for both the fall and winter lecture series. Admission to law school.

552. Professional Development Skills Training. (0.5)

Looking for legal employment can be frustrating if you lack the tools for a successful job search. This course will help students to create resumé's, business correspondence, and marketing plans; to understand ways to effectively interview and build a professional network; and to strategically incorporate technology and published resources in the job search.

Admission to law school.

599R. Externship. (1-4)

Students are able to earn one credit for each 50 hours of work performed in an approved externship.

First-year law courses.

602. Administrative Law. (3)

An examination of the administrative process. The course examines why administrative agencies are created, how they obtain information and the uses of that information, what proceedings (rulemaking/adjudication) agencies can commence, and what controls over agency action (political/judicial) exist. The role of the attorney in this process is emphasized.

First-year law courses.

603. Criminal Procedure: Investigation. (3)

Problems in administering a system of criminal law; constitutional and policy limitations upon public officers in dealing with suspected, charged, and convicted offenders.

First-year law courses.

605. Antitrust. (3)

Development of legal doctrine under the Sherman Act and supplemental legislation, including price fixing, division of market, monopolization, mergers, tying and exclusive dealing arrangements, boycotts, and special relationships between principles of patent and antitrust law. Emphasis: the relationships between principles of law and economics, examined in the context of certain key cases.

First-year law courses.

606. American Legal History. (2-3)

Survey of American law from the colonial and early national period to the present with special emphasis on public law, federal-state relations, individual rights, legal thought, judicial review, legal institutions, and civil procedure.

First-year law courses.

607. Ancient Laws in the Bible and Book of Mormon. (3)

Comparative study of legal topics in the law codes and legal systems of the Old Testament, legal narratives in the New Testament, the trials of Jesus and Paul, and the legal cases in the Book of Mormon, as well as the codes of the Sumerians, Babylonians, Hittites, Assyrians, and Greek and Roman law.

First-year law courses.

608. Debtors and Creditors. (2-3)

A practical course for lawyers who plan on representing businesses or individuals in today's economy. The course covers the relationship between debtors and creditors under both state debt collection law and bankruptcy law, with an emphasis on bankruptcy law. The course focuses on bankruptcy issues from both a consumer and business perspective, covering bankruptcy and commercial principles applicable in a wide variety of legal and business settings.

First-year law courses.

609. Freedom of Religion. (3)

Study of the Free Exercise and Establishment Clauses of the First Amendment and related issues.

First-year law courses.

610. Business Organizations. (3)

Introduction to business associations, agency, uniform partnership acts, the essentials of corporate formation, shareholders rights, special problems of closely held businesses, preemptive rights, etc.

First-year law courses.

612. Accounting for Lawyers. (2-3)

This course teaches generally accepted accounting principles, practices, and standards. Includes information about accrual accounting and revenue recognition, double-entry record keeping, development of accounting principles and auditing standards, the time value of money, financial statement analysis, and contingencies. Intended for law students who do not have an accounting background. Students who have a substantial background in accounting or who have recently taken an introductory accounting class are ineligible to take or receive credit for this course.

First-year law courses.

613. Community Lawyering. (3)

Christian reconstruction of the lawyer's role in public life, especially how that role is performed among the disadvantaged.

First-year law courses.

615. Secured Transactions. (3)

All aspects of security in personal property (personal property includes everything except land). Problems and legal principles relevant to the creation of the security interest, to its perfection, to priorities between competing security interests and between a security interest and other kinds of property interest, to payment and redemption, and to realization procedures. Article 9 of the Uniform Commercial Code.

First-year law courses.

616. Commercial Paper. (3)

Negotiable instruments (checks, drafts, notes) under Articles 3 and 4 of the Uniform Commercial Code; letters of credit and electronic transfers.

First-year law courses.

617. Comparative Law. (3)

Non-common-law legal tradition, emphasizing civil law. Legal traditions of Islamic and socialist countries.

First-year law courses.

619.Conflict of Laws. (2-3)

Jurisdiction issues, choice of law, and recognition of judgments in cases involving interstate and state-federal conflicts.

First-year law courses.

620.National Security Law. (3)

This course surveys the framework of domestic and international laws that variously authorize and restrain the pursuit of the U.S. government's national security policies. "National security" can mean a great many things, of course, but for purposes of this course we will be concerned primarily with the interactions of the government and the allocation of power between the branches of the government in relation to (i) the use of military force, (ii) the activities of the intelligence community, and (iii) counter terrorism-related activities (including the interrogation, detention, and trial of captured persons).

First-year law courses; Law 659 and/or Law 751.

621.The Fourteenth Amendment. (3)

Express and implied individual rights guaranteed by the privileges or immunities, equal protection, and due process clauses of the Fourteenth Amendment.

First-year law courses.

622.Employment Law. (3)

Employment discrimination: benefits, compensation, and hours; workplace safety and health. Offers an overview of the important legal issues that are raised in the context of the employment relationship. Discussion of employment as a contractual agreement, including tort and statutory protections, such as wrongful discharge, wage and hour laws (FLSA), leave (e.g. FMLA), safety (OSHA and workers comp), unemployment insurance, discrimination (Title VII; ADA; ADEA), privacy and freedom of speech, and intellectual property issues such as R&D ownership, trade secrets and non-competition.

First-year law courses.

623.Business Reorganization Under the Bankruptcy Code. (3)

A practical analysis of the law and policy underlying business reorganizations in Chapter 11: from filing of the petition to the confirmation of the plan.

LAW 608; First-year law courses.

624.Environmental Law. (3)

A study of the major federal laws relating to environmental protection, including the Endangered Species Act, the Clean Air Act, the Clean Water Act, the National Environmental Policy Act, and CERCLA.

First-year law courses.

625.Evidence. (3)

An examination of the law of evidence, including the principles governing the admissibility of evidence, the competency of witnesses, and the function of lawyer, judge, and jury in the presentation and evaluation of evidence.

First-year law courses.

626.The First Amendment. (3)

Rights guaranteed by the speech, press, and religion clauses of the First Amendment.

First-year law courses.

627.Appellate Practice and Procedure. (2-3)

Explores a range of procedural issues that arise in appellate litigation in the federal and state courts, including preservation of issues; appealability; parties on appeal; perfecting an appeal; relief pending appeal; and standards of review. Students will consider these issues as they arise in cases and rules in federal and state appellate systems, with some comparative analysis of the differences between the two systems.

First-year law courses.

628.Remedies. (3)

A study of the general principles and basic rules governing the rich inventory of remedies available through American courts. The principles associated with the law of remedies cut across substantive fields and guides the lawyer in fashioning or defending against various remedial schemes in any substantive contest. The course emphasizes issues and developments of contemporary importance and includes public as well as private law remedies. In this course we will study the law of remedies through the traditional caselaw method and by use of practice-oriented litigation exercises.

First-year law courses.

630.Criminal Trial Practice. (2)

This course will develop the art and practical skill of trial advocacy. It will focus on typical situations that arise in the trial of a criminal case. Emphasis will be placed on the academic theory, as well as the technique of the whole range of advocacy skills. The developed skills will be transferable to general civil litigation.

First-year law courses.

631.Mining Law. (2-3)

Study of mineral interests, land status determinations, acquisition of mineral rights, mining entry and location of claims, mineral leasing, and mining agreements.

First-year law courses.

632.Family Law. (3)

Introduces general principles, leading cases and statutes, contemporary legal issues, and doctrinal trends in the law regulating domestic relationships. Spousal and parent-child relations are studied in a creation-ongoing-termination sequence.

First-year law courses.

633.Children and the Law. (2)

Issues relating to state regulation of parent-child relations, including children's rights, parent rights, juvenile courts, adoption, health decisions, educational decisions, child abuse and neglect, youth status offenses, and delinquency. First-year law courses.

634.Law and Public Education. (2)

An examination of the constitutional issues affecting public education in the United States: free speech, religion in the schools, student conduct, teachers' rights, teacher discipline, special education, home schooling, etc. First-year law courses.

635.Federal Courts 1. (3)

This course provides an important foundation for litigation, civil rights, and government practice careers and for judicial clerkships. It provides an advanced study of the federal structure of our judicial system, with emphasis on the relationship and respective powers of federal and state courts and the relationship between the legislative, executive, and judicial branches of the federal government. Topics studied include what cases are justiciable, the power of Congress to define and limit the jurisdiction of federal courts, how federal law is applied in state courts, federal court review of state court decisions, the power of federal courts to create federal common law, civil rights litigation and immunities, and judicial federalism. First-year law courses.

637.Advanced Estate Planning. (3)

An examination of the effective disposition of wealth by inter vivos gift and testamentary transfer; income, estate, and gift tax considerations; use of trust form; use of insurance; use of jointly held property; planning for continuation or disposition of client's business interests. LAW 666 & LAW 683 & LAW 726; First-year law courses.

639.International Business Transactions. (3)

Making, regulating, and breaking international business transactions. (1) Formation of international business transactions, focusing on contracting for and financing the international sale of goods, licensing and distributorship agreements, and foreign direct investment. (2) Regulation stage of international business transactions, including the transactional reach of U.S. government regulation, regulation of corrupt payments to foreign officials, international protection of intellectual property, and securities and antitrust aspects of international transactions. (3) Breaking international business transactions; transnational dispute resolution through arbitration and through transnational litigation in U.S. courts. First-year law courses.

640.Federal Taxation 1. (4)

A study of federal personal income tax, with an introduction to business and corporate income tax and federal tax procedure. Emphasis is placed on developing the student's ability to exam and understand statutory, judicial, and administrative tax law and to apply the law in solving specific problems. First-year law courses.

641.Federal Taxation 2. (4)

This course covers in detail the federal income tax consequences flowing from the creation, operation, dissolution, and sale of partnerships, limited liability companies, and corporations and examines federal tax considerations bearing on the choice between conducting a business in partnership, limited liability company, or corporate form. Law 640 or instructor approval; first-year law courses.

643.International Taxation. (3)

Rules governing U.S. taxation of income earned within the U.S. by foreigners and income earned abroad by U.S. residents. Critique of these rules in light of economic and international law norms. LAW 640; First-year law courses.

645.Federal Indian Law. (3)

Law of the federal government and the states respecting Native Americans and their land. Relationship of European discoverers and Native Americans during colonial period; Native American treaties, executive orders, and agreements; changing United States policy respecting Native Americans; federal, state, and tribal jurisdictions, civil and criminal; tribal courts; Native American hunting and fishing rights, water rights, and civil rights. First-year law courses.

646.Jurisprudence. (3)

This course will study the classical sources and conceptions of law, including natural law, natural rights, positivism, realism, and the "legal process" school. First-year law courses.

649.Banking Law. (2-3)

Review the laws affecting commercial banks and thrift institutions, the functions of the various federal and state regulatory agencies, the development of innovative forms of financial services, the effects of electronic technology upon banking law and interstate banking. Provides an overview of the different regulatory regimes affecting financial institutions (e.g., insurance companies, broker-dealers, investment banks, private funds, and depository institutions), with primary focus on banking law and regulation. First-year law courses.

650.Real Estate Finance. (3)

Review of real estate transactions. Real estate finance including mortgages, trust deeds, installment sales contracts, other mortgage substitutes, receiverships, transfer of real estate security interests, discharge, deeds in lieu of foreclosure, foreclosure, foreclosure sales, redemption, deficiency payments, priorities, mechanics liens, judgment liens, purchase money mortgages, and ground leases. First-year law courses.

652.Legislation. (2)

This course considers the method by which public policy comes to be enforced by statutes in our legal system. It focuses primarily on issues raised by different theories of statutory interpretation, but also addresses various political theories of legislation and the impact of administrative agency enforcement of statutes. First-year law courses.

653.Legal Interviewing and Counseling. (3)

An intensive skill development course that uses simulation methods to develop proficiency in the use of legal interviewing and counseling methods and techniques. First-year law courses.

654.Child Advocacy. (2)

Learn about the juvenile court system and how issues of abuse, neglect and delinquency are handled. Learn how the judicial system affects the lives of children and how advocates can make a difference in the system. Opportunity to "shadow" attorneys from the Guardian Ad Litem's office, the Public Defender's and Attorney General's offices, and to sit in court with a Juvenile Court Judge. Students will tour the Detention Center, the House of Hope, Independence High School, Lightning Peak, Family Support and Treatment and the Children's Justice Center. First-year law courses.

655.Labor Law. (2)

Examines how collective bargaining relationships are established and how collective bargaining agreements are negotiated and administered in the private sector. Also explores use of economic tactics, e.g., strikes, boycotts and picketing. First-year law courses.

656.Public Lands and Natural Resources. (3)

This course surveys the field of natural resources law, primarily in the context of the federal public lands. Topics covered include public land law, water, wildlife and biodiversity, grazing and range management, recreation and preservation. First-year law courses.

658.Land Use Planning. (3)

An examination of governmental control over private land use and development. Subjects include zoning, subdivision and growth controls, and various constitutional issues raised by land use restraints. First-year law courses.

659.Public International Law. (3)

An examination of the nature of public international law including custom and treaties as sources of law, international responsibilities and remedies, and jurisdictional issues. First-year law courses.

660.Professional Responsibility. (3)

This course uses the Model Rules of Professional Conduct as a backdrop for an examination of issues in ethical lawyering. First-year law courses.

662.Securities Regulation. (3)

Securities Act of 1933, Securities Exchange Act of 1934, state blue sky laws and regulations, distribution and trading of securities, express and implied civil liabilities, criminal liability, insider trading, tender offers, broker-dealer regulation, and the role of lawyers. LAW 610; First-year law courses.

663.State and Local Government 1. (3)

Interrelationship among national, state, and local governments and the powers of each, as well as examination of separation-of-powers principles and impact of political process at state and local level. First-year law courses.

665.Origins of the Constitution. (3)

Examination of intellectual origins of the U.S. Constitution; review of drafting and adoption of Constitution and Bill of Rights. Students read all of Madison's Notes of the Debates at the Federal Convention, some of the Federalist and Anti-Federalist Papers, and a few contemporary reflections upon the Constitution's origins. First-year law courses.

666.Wills and Estates. (3)

Transfer of property through intestate succession; wills and will substitutes; effect of community property ownership; legal and ethical issues surrounding end-of-life decisions, including living wills, medical directives, and medical powers of attorney; administration of decedents' estates. First-year law courses.

668.Negotiation. (3)

Negotiation is essential for all lawyers. This course helps students understand negotiation strategies and ethics, improves communication skills, and provides practice for effective implementation of negotiation techniques. Will benefit students interested in any practice area. First-year law courses.

669.Civil Discovery. (2)

Students will learn about the discovery process in civil litigation, including depositions, the production of documents, interrogatories, requests for admissions, mandatory disclosures, subpoenas, expert witnesses, and electronic discovery. First-year law courses.

671.Oil and Gas. (2)

This course will include coverage of the following: the nature of interests in oil and gas, the oil and gas lease and associated problems, title and conveyancing problems with respect to transfers of oil and gas interests, and pooling and unitization.

First-year law courses.

674.Law Office Management. (2)

This course is designed to introduce law students to issues that arise in the private practice of law. The underlying thesis is that a law office is a business, and that success in private practice is as much a function of effective management as it is a function of mastering substantive legal knowledge. The course looks at the organization of the law firm; the partnership, the professional corporation, and the proprietorship including the partnership or shareholder agreement. The roles of partners/shareholders and associates will be addressed, particularly with respect to the income production and compensation. One segment examines non-lawyer personnel: secretaries, paralegals, and other employees. Another segment addresses the law office itself: equipment, library, layout and design, supplies, and furniture. An important aspect of any office is the effectiveness of its system, both substantive and administrative, and the class will study how to implement such systems. The course will emphasize practical information as opposed to theoretical concepts.

First-year law courses.

675.Civil Rights. (2-3)

Focuses on the current importance and application of the civil rights laws enacted after the Civil War and in the modern civil rights era. These laws provide the essential foundation for modern litigation on a wide range of constitutional and statutory protections and provide the basis for federal and private enforcement of statutory civil rights protections.

First-year law courses.

677.Charitable Organizations. (2)

Practical and theoretical concerns in organizing and representing nonprofit or tax-exempt entities.

First-year law courses.

678.Social Policy and Feminist Legal Thought. (3)

Feminist jurisprudence. Various doctrinal strains in development of feminist legal theory and method; applying them to facially neutral legal issues. Rape, domestic violence, employment discrimination, historical and sociological gender treatment, and practical changes in legal profession accompanying influx of greater numbers of women lawyers.

First-year law courses.

683.Trusts. (2)

This course examines the legal framework of private and charitable trusts as vehicles for the donative disposition and management of personal wealth, both inter vivos and testamentary with emphasis on the nature of the fiduciary obligations of trustees and the rights and obligations of trust grantors and beneficiaries.

First-year law courses.

684.Water Law. (3)

The course considers (1) state water law with a focus on the western United States, (2) public vs. private rights in water; and (3) allocation of water between the federal government, states, and Indian tribes.

First-year law courses.

685.Introduction to American Law. (3)

A survey of basic concepts and institutions in the American legal system. The survey is designed for persons who have received their law degree or its equivalent from a university outside the United States. Must be an LLM candidate.

686R.Special Topics in Law. (1-2)

First-year law courses.

687R.Special Topics in Law. (1-4)

First-year law courses.

688.European Union Law (2-3)

Introduces students to both the governing institutions of the EU and the structure of the EU legal system. Examines the content and effects of those parts of EU law that are most important to making the EU function as a single community.

First-year law courses.

689.Computer-Based Practice System (2)

Teaches students to use document automation tools to develop automated legal documents and practice systems, and examines how these knowledge tools are used to improve legal service delivery.

First-year law courses.

690.Criminal Trial Advocacy. (2)

This course is designed for students who are interested in a career in criminal law, and have taken the first-year criminal law course. While it would be helpful for students to have taken criminal trial practice first, it is not a prerequisite. The course curriculum covers many of the aspects of criminal trial practice beyond the basics of courtroom practice. Subjects to be covered include criminal discovery practice, grand jury practice, representation of clients pre-indictment, pretrial motion practice (motions to suppress, etc.), jury selection and jury instructions, affirmative defenses (insanity, alibi, self defense, etc.), use of experts in criminal cases and investigators and agents, organizing for trial, use of exhibits, bench and jury trial strategies as well as advocacy before judges versus juries, sentencing considerations, and post-trial motions to include perfecting an appeal, and appeals.

LAW 630

691.Criminal Procedure: Adjudication. (3)

Criminal procedure from the filing of charges through the appeals. Pretrial release and detention, the preliminary hearing, the grand jury, the charging instrument, joinder and severance, discovery, selected trial issues, plea bargaining, sentencing and appeals.

692.Cyberlaw. (3)

Covers issues in regulating cyberspace (both nationally and internationally), privacy, ownership and access, and speech and content. Briefly reviews intellectual property issues online, primarily copyright. First-year law courses.

693.Disaster Law. (2-3)

Students will learn to analyze the human contributions to "natural disasters" and to develop tools for legislating in the face of uncertainty, designing fair compensation and insurance schemes, and rebuilding communities devastated by disasters. First-year law courses.

694.Domestic Relations. (2)

Learn about the practical issues involved in handling a divorce case. Study the process, the documents and the primary issues involved in divorce and custody cases. Students will have the opportunity to work with real cases through the Family Justice Center on Tuesday evenings from 5:00-9:00 p.m. Students do not need to be available every Tuesday or for the full range of hours. First-year law courses.

697.Employment Discrimination Law. (2-3)

Examines the theories and policies underlying anti-discrimination laws and the ever-shifting statutory, regulatory, and case law relating to the prevention of unlawful discrimination in the workplace. Focuses on existing anti-discrimination laws, as well as discussing the procedural process for prosecuting and defending discrimination claims. First-year law courses.

698R.Skills Lab. (1-3)

Students practice lawyering skills, either through simulations or in the field. An appendage to a doctrinal course; students in the lab must be enrolled concurrently in the related doctrinal course.

First-year law courses.

700.International Protection of Religious Freedom. (2)

U.S. and international religious liberty issues - principles, methodologies, international human rights. Analyzing religious liberties in countries around the world.

First-year law courses.

702.Church and State in the United States. (2)

U.S. and international religious liberty issues. Focuses on free exercise and establishment clauses of First Amendment.

First-year law courses.

703.Real Estate Development. (3)

Risks in real estate development and steps to take a real estate project to completion. Market conditions for the proposed use and site, planning/zoning issues and resolutions, financing, site-related legal issues.

First-year law courses.

704.Immigration Law. (2-3)

Overview of the powers to regulate immigration law; admission and removal of foreigners; refugee and asylum law; impact of business/employment-based immigration.

First-year law courses.

705.Civil Trial Practice 1. (2)

The skill of interviewing, drafting, negotiating, and using time efficiently in the context of preparing a legal matter; carrying a case through all the stages of preparation and litigation.

First-year law courses.

706.Civil Trial Practice 2. (2)

The skills of interviewing, drafting, negotiating, and using time efficiently in the context of preparing a legal matter; carrying a case through all the stages of preparation and litigation.

First-year law courses.

707.Health Law and Policy. (2)

An interdisciplinary introduction to the largest industry in the United States, the health care industry. Subjects to be covered include health care regulatory law (EMTALA, HIPAA, ERISA, Medicare, Medicaid), health care policy with emphasis on access to health care, and how to advocate for health care consumers. First-year law courses.

708.Comparative Constitutional Law. (2-3)

Introduction to the major systems of constitutional judicial review outside the United States with a focus on equal protection, separation of powers, constitutional interpretation, and fundamental rights. First-year law courses.

710.Advanced Comparative Law 1. (2)

Papers written on transnational and comparative topics during fall prepared for possible inclusion in law review. First-year law courses. Editing experience or completion of an international or comparative paper prior to the start of the course.

713.Supreme Court. (2)

Examining the U.S. Supreme Court emphasizing participation in hands-on exercises. Student will draft one opinion on a case on which he or she sits. First-year law courses.

715.Alternative Dispute Resolution. (2)

Theory and practice of dispute resolution, emphasizing alternatives to traditional litigation such as negotiation, mediation, and arbitration as well as "hybrids." First-year law courses.

717. Joseph Smith and Early American Law. (2-3)

Joseph Smith's ideas and experiences involving the law from 1805-1844. Projects related to the Joseph Smith Legal Papers. Topics: religious liberty, civil rights, disturbing the peace, copyright, civic virtue, marriage, militias, treason, conspiracy, prisons, petitions, city charters, incorporation, property, debt, bankruptcy, freedom of the press, extradition, writs of habeas corpus, elections, abolition, slander, murder, and revelations and teachings of the prophet on civil and divine law. First-year law courses.

719. International Environmental Law. (2-3)

Developing international regimes and norms relating to protection of global environment, including climate change, preservation of wildlife, and biodiversity; freshwater resources and Law of the Sea. First-year law courses.

720. Legal Research and Writing. (2)

Basic research in American legal tradition and personalized training in writing legal documents in English for non-U.S. attorneys in the LLM program. Must be an LLM candidate.

722. Principles of Trial Advocacy. (2)

Basic principles of litigation skills and trial advocacy, including opening statements, direct examination, admissibility of proof, objections, and closing statements. First-year law courses.

723. International Human Rights. (3)

Introduction to international law of human rights -- historical evolution of human rights, treatment within U.N. system, significance of European law, challenges in human rights abuse. First-year law courses.

724. Basic Mediation. (3)

Fundamental communication and mediation skills. Simulated exercises and role playing. First-year law courses.

726. Basic Estate Planning. (2-3)

Problem-based examination of planning strategies commonly used to accumulate, manage, and dispose of family wealth. LAW 666; First-year law courses.

727. Trademark Law. (2-3)

Introduction to Lanham Act and related common law doctrines designed to protect against consumer confusion and appropriation of commercial goodwill. In addition to the technical requirements for trademark eligibility, registration, and infringement, the constitutional and economic underpinnings of trademark protection will be considered and current trends toward the "propertyization" of trademark law will be evaluated. Will also include material on the trademark treatment of Internet domain names, metatags, and links. First-year law courses.

728. Copyright Law. (2-3)

Copyright's purpose, statutory structure, application in the courts, and role within intellectual property law and society. Topics include the subject matter requirements for copyrightability; the exclusive rights of copyright owners; duration, ownership, and transfer; copyright infringement litigation; contributory and vicarious liability; and fair use. First-year law courses.

729. Solo and Small Firm Practice. (2)

Skills required to build a solo or small firm law practice. Topics include locating and equipping the law office, building a client base, managing time, fee management, specializing, managing administrative staff, ethical standards, and creating relationships with other participants in the legal system. First-year law courses.

730. Corporate Counsel. (2-3)

The role of the corporate counsel in setting the direction of the corporation, navigating complex internal relationships, and managing challenging external relationships with various corporate stakeholders. First-year law courses. Law 610, Business Associations, is required prior to or concurrently with this course.

731. Introduction to Intellectual Property. (3)

Overview course covering the basics of intellectual property (IP) law — trade secrets, patents, copyrights, and trademarks, as well as selected other state intellectual property rights. No science background necessary. First-year law courses.

732. Immigrant Rights. (2-3)

This course is devoted to an exploration of the rights and obligations aliens have when they are within U.S. borders. Students will examine when and how these rights and obligations are complicated for individuals and communities by a lack of U.S. citizenship. For example, are noncitizens eligible for welfare benefits or public employment? Should lawful permanent residents be allowed to vote? Can lawfully admitted nonimmigrants become public school teachers, lawyers, or police officers? If noncitizens are here unlawfully, are they protected by employment law or have access to public education or to driver licenses? Can states and cities block their access to housing or jobs? More generally, we will consider whether the rights of noncitizens come from the U.S. Constitution or from statutes, and when they are best analyzed from a civil rights or a human rights perspective. We will also examine the citizen/non-citizen distinction in historical and comparative perspective, as part of the larger question of what it means to be "foreign." These questions often implicate matters of race, gender, and class. First-year law courses.

733. Media Law. (3)

The intersection of media and the law and impact upon the press. Prior restraint, reporter's privilege, access to court proceedings, libel, appropriation, and rights of privacy.

734. Fundamental Lawyering Skills. (3)

The primary focus of this survey course is on interviewing, counseling, mediation, negotiation and persuasive fact analysis—skills deemed essential to the overall success of a lawyer.

736. Mergers and Acquisitions. (3)

This course will review a wide range of issues related to buying and selling companies, including transaction alternatives, tax roadblocks, the essential elements of the acquisition agreement and risk allocation strategies of the buyer and the seller. The course will address the differences between stock and asset acquisitions, and issues related to valuing a business, successor liability, and the attorney's role in representing the buyer or seller in an acquisition transaction. First-year law courses.

737. Law of Higher Education. (2)

A comprehensive review of the legal principles and practices involved in the administration of institutions of higher education in the United States. First-year law courses.

738. Law of Armed Conflict. (2-3)

Detailed examination of the Law of Armed Conflict (LOAC) and its application on the modern battlefield. Loosely based on a historical scenario which will help illustrate the principles, doctrines, and law that govern the use of force by a nation. Covers general principles applicable to armed conflict, followed by detailed study of specific law of armed conflict legal principles and provisions. Law 659.

739. Legal Drafting. (2)

Learn: (1) how legal drafting differs from other writing; (2) how to easily organize your documents; (3) how to address your audience convincingly; (4) how to use a simple technique to assure accurate interpretation of your documents in the future; (5) how to simply frame complex legal issues; and (6) how to write precisely. Learn the fundamental rules of drafting and analyze violations of those basic rules. First-year law courses.

740. Public Speaking for Lawyers. (3)

Communication and interdisciplinary theories and strategies needed for effective persuasive public speaking: speech study, audience analysis, outlining, documentation, organizational skills, word choice, and presentation.

741. Legal Scholarship. (2-3)

Helps students begin to prepare for a career in legal academics. Students will work to identify areas of scholarly and teaching interest, develop a research agenda, prepare a scholarly article, present a job talk, and understand the academic hiring process. First-year law courses.

742. Mediation Practicum. (1-2)

Students build on the basic skills they learned in Basic Mediation both in weekly meetings and in participating in actual mediations in small claims court and other venues. LAW 724; First-year law courses.

743. Appellate Brief Writing. (3)

Persuasive writing techniques, organization, strategy-priority of arguments, handling a circuit split, policy arguments, standards of review, persuasion techniques, handling adverse authority, and effective counter argument. First-year law courses.

745. Patent Law. (3)

Focuses on the U.S. patent system and is designed for those with a significant interest in patent law and patent practice. First-year law courses.

746. Presidential Power. (2)

Examines the constitutional law that creates, defines, and limits the power of the American presidency. Emphasis given to the debates that preceded the drafting of Article II and accompanied the ratification of the Constitution, and the history of the exercise of presidential power. Special emphasis given to the administrations of Lincoln, the two Roosevelts, and the presidents since the emergence of the United States as the pre-eminent nation in the global community after World War II. First-year law courses.

747. Public Speaking for Lawyers. (2)

Examines public speech from both theoretical and practical perspectives, and enables students to develop a skill-set heavily relied upon by attorneys from all practice backgrounds. Examines communication and interdisciplinary theories and mechanics/strategies needed for effective persuasive public speaking like speech study, audience analysis, outlining, documentation, organizational skills, word choice, and presentation. Every speech will focus on topics that are legally relevant. First-year law courses.

748. Sentencing. (2)

Examines law and policy with respect to sentencing of adult offenders in the United States. Looks at theories, structures and practices involved in sentencing and sentence decision-making. Interactive, discussion-oriented course including presentations from expert practitioners such as judges, prosecutors, defense counsel, and community leaders and advocates. First-year law courses.

749. Technology Licensing. (2-3)

An overview of the substantive issues and negotiation positions involved in licensing intellectual property rights through technology transfer, OEM, distribution, end user, joint venture, and related agreements. The class will emphasize developing client counseling skills and understanding both the legal arguments and the business context surrounding the most commonly negotiated provisions in licensing and IP agreements.

First-year law courses.

750. Transactional Lawyering. (2-3)

Emphasizes practical skills over substantive knowledge, teaches the elements of contracts and how these elements work together. Learn how to translate what your client wants to accomplish into a clear and effective contract, and how to revise contracts with an eye to advocacy rather than stylistic preference. Work with various forms of existing agreements to craft contracts tailored to your client's needs. Prepare contracts and documents used by early stage companies.

First-year law courses.

751. U.S. Foreign Relations Law. (3)

Examines constitutional, statutory, and common law doctrines that govern the United States' conduct of foreign relations. Focuses on the allocation of foreign relations authority, both among the branches of the federal government and between the federal and state governments. Specific topics include the scope of the treaty power, the constitutionality of executive agreements, the judiciary's role in deciding foreign relations questions, and the domestic legal status of international law.

First-year law courses.

753. White Collar Crime. (2-3)

Explores what white collar crime is, what separates it from traditional street crime, and surveys many of the classic types of white collar crime. Covers various types of fraud and white collar offenses including ponzi schemes, money laundering, cyber crimes, healthcare fraud, securities fraud, and public corruption. Reviews the major state and federal statutes which are used to prosecute these crimes as well as reviewing key principles in the investigation of white collar crime such as investigative guidelines.

Examines how to accurately assess and determine mens rea in a white collar case.

First-year law courses.

754. Youth in Mediation. (2)

Work with the juvenile justice system and learn the aspects of restorative justice. Discuss the impact youth crime has on victims, offenders, families and communities. This skills-based class teaches both basic and advanced techniques for mediation, specially focusing on parent/teen and victim/offender mediation. Completion of the course will give you 28 training hours toward court qualification for mediation in the State of Utah. There is a highly recommended and OPTIONAL 1-credit, 50-hour externship. See Law 599R, Youth in Mediation Externship.

First-year law courses.

757. Domestic Violence Intervention. (2)

Learn about the dynamics involved within abusive families and how those dynamics play out in court. Learn how domestic violence is treated in each context that might be brought to court: criminal actions, protective and restraining orders, personal injury cases, custody and divorce actions and within the juvenile court system. Students will have the opportunity to work with real cases through the Family Justice center on Tuesday evenings from 5:00-9:00 p.m. Students do not need to be available every Tuesday or for the full range of hours.

First-year law courses.

758. Elder Law. (2)

Learn how to handle legal issues common to the elderly: estate planning and medical directives; consumer fraud; public benefits such as Medicaid, Medicare, social security; nursing homes; property issues; and elder abuse. Students will meet with elderly clients on a weekly basis at local senior citizen centers. Students will have the opportunity to draft simple wills, medical directives, and deeds in behalf of actual clients.

First-year law courses.

786. Government and Legislative Representation. (3)

Students participate in simulated exercises to review and draft legislation, to prepare legislative findings and "records" to support draft legislation and to prepare oral presentations of their work.

787. Community and Economic Development Representation. (2-3)

Students participate in simulated exercises on transactional matters which are commonly addressed through local community/economic development and redevelopment efforts. Students will have the opportunity to role play advising clients.

First-year law courses.

788R. Law School Clinic. (1-4)

Live-client interactions under the supervision of seasoned practitioners. Emphasis on the development of professional skills, including legal research and writing, counseling, interviewing, negotiation, mediation, and problem solving.

First-year law courses. Additional requirements may apply independently for each Law School Clinic.

790R. Directed Research. (1-2)

First-year law courses.

791R. Directed Readings. (1-2)

First-year law courses.

792R. Cocurricular Programs. (1)

First-year law courses.

793R.Cocurricular-- Special Assignments. (1-2)

First-year law courses; participation in cocurricular programs.

795R.Law School Seminar. (1-18)

First-year law courses.

796R.Law School Seminar. (1-18)

First-year law courses.

798R.LLM Thesis. (1-6)

Completion of fall semester LLM program.

FACULTY

Augustine-Adams, Kif Charles

E. Jones Professor of Law, JD, Harvard University, 1992. Public International Law; Race and Race Relations; Social Policy and Feminist Legal Thought; Fourteenth Amendment; Torts

Daniels, Brigham Associate Professor

of Law, JD, Stanford University, 2003; PhD, Duke University Sc. 2003, Legislation and Regulation; Property Law; Environmental Law; Water Law

Dominguez, David Professor of Law,

JD, University of California, Berkeley, 1980. Community Lawyering; Criminal Law; Work Law

Durham Jr., W. Cole Susa Young

Gates University Professor of Law; Director, Center for Law and Religion Studies, JD, Harvard University, 1975. Comparative Constitutional Law; Contemporary Legal Theory; International Protection of Religious Freedom; Law and Religion in the United States

Farmer, Larry C. Marion G.

Romney Professor of Law, PHD, Brigham Young University, 1975. Computer-Based Practice Systems; Legal Interviewing and Counseling

Fee, John E. Professor of Law, JD,

University of Chicago, 1995. Land-Use Planning; Property; State and Local Government; Structures of the Constitution

Fleming Jr., J. Clifton

Ernest L. Wilkinson Chair and

Professor of Law, JD, George Washington University, 1967. European Union Law; Federal Taxation; International Taxation; Public International Law

Gedicks, Frederick M. Guy Anderson

Chair and Professor of Law, JD, University of South California, 1980. Federal Courts; Structures of the Constitution; Fourteenth Amendment; Freedom of Religion; Substantive Due Process

Gerdy, Kristin Teaching Professor

and Director, Rex E. Lee Advocacy Program, JD, Brigham Young University, 1995. Introduction to Advocacy; Introduction to Legal Research and Writing; Advanced Appellate Brief Writing; Public Speaking for Lawyers

Gordon III., James D. Marion B. and

Rulon A. Earl Professor of Law, JD, University of California, Berkeley, 1980. Professional Responsibility; Professional Seminar

Hernandez III, Carl Associate

Teaching Professor of Law, JD/MPA, Brigham Young University, 1992. Civil Rights; Community and Economic Development Representation; Fundamental Lawyering Skills; Government and Legislative Representation

Hoagland, Mary H. Assistant Dean

of Career Services and External Relations, PHD, Brigham Young University, 2007. Professional Development

Jensen, Eric Talbot Associate Professor

of Law, JD, University of Notre Dame Law School, 1994. Criminal Law; Public International Law; Law of Armed Conflict

Jones, RonNell Andersen Associate

Professor of Law, JD, The Ohio State University Moritz College of Law, 2000. First Amendment; Legislation and Regulation; Structures of the Constitution

Moore, David H. Professor of Law, JD,

Brigham Young University, 1996. Civil Procedure; International Human Rights; Legal Scholarship; Public International Law

Nielson, Aaron Associate Professor of

Law, JD, Harvard University, 2007. Civil Procedure; Administrative Law

Nunez, Carolina Associate Professor

of Law, JD, Brigham Young University, 2004. Immigration Law; Professional Responsibility; Torts

Preston, Cheryl Bailey Edwin M.

Thomas Professor of Law, JD, Brigham Young University, 1979. Business Organizations; Contracts; Cyberlaw

Rasband, James R. Dean and Hugh

W. Colton Professor of Law, JD, Harvard University, 1989. International Environmental Law; Public Lands and Natural Resources; Torts; Water Law

Scharffs, Brett G. Associate Dean

for Research and Academic Affairs; Francis R. Kirkham Professor of Law; Associate Director, International Center for Law and Rel. Stud, JD, Yale University, 1992. Business Organizations; Law and Religion in the United States; International Business Transactions; International Protection of Religious Freedoms; Law and Logic

Smith, D. Gordon Associate Dean

for Faculty and Curriculum and Glen L. Farr Professor of Law, JD, University of Chicago, 1990. Business Organizations; Contracts; Corporate Finance; Law and Entrepreneurship; Securities Regulation

Sun, Lisa Grow Associate Professor of

Law, JD, Harvard University, 1997. Disaster Law; Structures of the Constitution; Torts

Wardle, Lynn D. *Bruce C. Hafen*
Professor of Law, JD, Duke
University, 1974. Biomedical
Ethics; Children and the Law;
Civil Procedure; Conflict of
Laws; Family Law; Origins of the
Constitution

Welch, John W. *Robert K. Thomas*
University Professor of Law, JD,
Duke University, 1975. Ancient
Laws in the Hebrew Bible
and Book of Mormon; Joseph
Smith and the Law; Law in
New Testament; Tax-Exempt
Organizations

Worthen, Kevin J. *University*
President and Hugh W. Colton
Professor of Law, JD, BYU, 1972.
Professional Seminar

LINGUISTICS AND ENGLISH LANGUAGE

Chair: Evans, Norman
Graduate Coordinator - TESOL MA:
Gardner, Dee
Graduate Coordinator - Linguistics MA: Eggington, William

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THE PROGRAMS OF STUDY

The Department of Linguistics and English Language offers two graduate degrees: Linguistics MA and TESOL MA. Both MA degrees require an oral defense of a thesis. These programs continue to have a significant influence at Brigham Young University with its rich language resources, and in a world setting where the demand for skilled language professionals is at an all-time premium, especially in the areas of teaching English as a second or foreign language. Students enrolling in these graduate programs receive state-of-the-art instruction in both the theoretical and applied aspects of linguistics.

Teaching English to Speakers of Other Languages - MA

Requirements for TESOL MA Degree

- Credit hours (37): minimum 22 course work hours plus 6 thesis hours (Ling 699R), or 6 project hours (Ling 698R for 3 hours) and 3 internship hours (Ling 688R).
- Required courses: Ling 610, 611, 612, 620, 631, 640, 660, 695, 698R plus 688R, or 699R
- Elective: 9 elective hours with the possibility of selecting one of the following four specializations:
- Teaching: Ling 655, 670 and 671
- Curriculum & Materials Development: Ling 677, 678, 670 or 671

- Program Administration: Ling 677, 679, 670, or 671
- Curriculum & Assessment: Ling 677, plus faculty-directed elective, 670 or 671
- Thesis - Ling 699R (6 hours)
- Project - Ling 698R (3 hours), plus Ling 688R Academic Internship (3 hours)
- Oral defense of project/thesis.

For a more detailed description of the graduate program requirements, see <http://linguistics.byu.edu>.

FINANCIAL ASSISTANCE

Financial assistance has been available over the past several years, particularly in the form of partial-tuition scholarships. One of the benefits that comes to both linguistics and TESOL students is the fact that many professors use teaching and research assistants. Also, many of those studying TESOL have the opportunity to become teaching assistants or part-time teachers at the English Language Center, where there are about twenty graduate student teachers.

COURSE DESCRIPTION

ELANG

521R.Studies in Language. (3)
Topics vary.
ELANG 223; or LING 201; or equivalent.

521R.English Spelling. (3)
ELANG 223; or LING 201; or equivalent.

522.Language Policy and Planning in English Language Contexts. (3)
Theories and practices of governing entities as they formulate policies relating to the status and codification of the English language.
ELANG 223; or LING 201; or equivalent.

524. History of the Book. (3)

History and development of the book, including modern methods and practices.

525. Old English 1. (3)

Old English grammar and vocabulary; traditional syntactical patterns in various types of Old English prose and poetry. ELANG 324; or equivalent.

526. Middle English. (3)

Detailed study of the principal dialects of Middle English, as illustrated in the literature of the period. ELANG 324; or equivalent.

529. Structure of Modern English. (3)

A thorough consideration of the syntactic structures and patterns of Modern English, with some attention given to possible applications. ELANG 325; or instructor's consent.

535. Language and Literature. (3)

Literature from a language perspective; applying linguistic constructs to literary language; examining literary style; linguistic analysis of unfamiliar texts. ELANG 223; or LING 201; or equivalent.

547. Seminar in Early Modern English. (3)

Seminar in a specific topic about the English language from 1500 to 1800. Emphasis on contributing to the research about this period. ELANG 447

548. Old English 2. (3)

Additional reading in Old English, emphasizing sound changes, dialects, and textual production. ELANG 525

568. Varieties of English. (3)

Research and theory of issues regarding regional and social variation in English, including world Englishes and English-based pidgins and creoles ELANG 468

LING

501. Advanced Research and Writing Techniques for Second Language Writers. (3)

Non-native English speaking students will develop research and writing techniques necessary for graduate-level writing. For graduate international ESL students.

542. Field Methods in Linguistics. (3)

Documenting an unfamiliar language by interacting with a native speaker.

545. Psycholinguistics. (3)

Research and theory behind how the mind interprets, stores, retrieves, and produces language. Anatomical structures and physiological processes of the brain dealing with language. Ling 445 or instructor's consent.

550. Sociolinguistics. (3)

Research and theory of how language functions in culture and society; focus on development, typology, and description of the relationship between language and society. LING 201; or ELANG 223; Ling 452 or instructor's approval.

551. Anthropological Linguistics. (3)

Language in culture and society: development, typology, and description. For Fall 2013 & forward admits, Ling 220 and Ling 230; or equivalent.

558. Historical-Comparative Linguistics. (3)

Learning theory and method of language change via comparing daughter languages and reconstructing ancestral languages. Language universals and typology. Ling 450 or equivalent.

580R. Problems in Linguistics and Applied Linguistics. (1-3)

Advanced research in language acquisition, sociolinguistics, psycholinguistics, linguistics field study, applied linguistics.

581. Natural Language Processing. (3)

Intensive overview of natural language processing, including computational techniques, hands-on experience with linguistic technologies and corpora, language modeling approaches, and readings from current research. Good programming skills in at least one language (preferably LISP, Prolog, C, C++, Perl, or Java) and a knowledge of basic discrete math. Upper-division linguistics/computers and the humanities students with less programming experience may enroll with ins

585. Research in Corpus Linguistics. (3)

Design and use of corpora for research with a focus on variation in language (by register, dialect, time, author, etc.). Ling 485 or instructor's approval.

590R. Readings in Linguistics. (1-3)

Individual study of current linguistic literature. Occasional discussion sessions with instructor and other class members. Instructor's consent.

599R. Academic Internship: Linguistics. (1-9)

On-the-job experience under faculty supervision, with department approval.

601. Linguistic Foundations: Sounds of Language. (3)

Principles of phonetics and phonology emphasizing analytical procedures and applications to real world language problems. Ling 330 or ELang 223 or equivalent experience.

602. Linguistic Foundations: Structures of Language. (3)

Principles of morphology and syntax emphasizing analytical procedures and applications to real world language problems. Ling 330 or ELang 223 or equivalent experience.

603.Linguistic Foundations: Meanings in Language. (3)

Principles of semantics and pragmatics emphasizing analytical procedures and applications to real world language problems. Ling 330 or ELang 223 or equivalent experience.

604.Research Design in Linguistics. (3)

Overview of, and experience in, research approaches and methodologies in linguistics and applied linguistics with a concentration on department faculty research interests. LING 601 & LING 602 & LING 603

610.TESOL Methods and Materials Overview. (3)

Foundation course surveying concepts, procedures, and techniques in second/foreign language teaching methodology and materials selection. Includes observing ESL classes in various contexts. Admission to the TESOL graduate program.

611.TESOL Methods and Materials Application. (3)

Practical application of language teaching methods and materials, including materials development and selection and technology for use in a mentored teaching practicum. LING 610

612.TESOL Practicum. (3)

Sustained and supervised practice teaching at the English Language Center. LING 610

615.Analogical Modeling of Language. (3)

Nondeclarative approaches to language description; work within the connectionist or neural net framework; analogical or exemplar modeling. Ling 330 or equivalent.

620.Research in TESOL. (3)

Analyzing and interpreting published research for language teachers, writing a review of literature, recognizing various research approaches and assessing their appropriateness, and designing empirical research that is both valid and reliable. LING 612

631.Grammar Theory and Pedagogy. (3)

Examining English grammar and usage as they reflect different theories about language description and applying this knowledge in the ESL/EFL classroom.

640.Language Acquisition. (3)

First- and second-language acquisition viewed in light of psycholinguistics and sociolinguistics.

651.Advanced Phonology. (3)

Study of sound systems of natural languages using current methods and theories. LING 601

652.Advanced Morphology. (3)

Morphological theory and applications including the lexicon, inflectional and derivational processes, compounding, valency, lexical conceptual and argument structure, morphophonology and morphosyntax, learnability, and modeling. LING 602

653.Advanced Syntax. (3)

Theory of generative grammar, emphasizing its history, the competition between different versions of generative theory, and their recent extensions. LING 602

654.Advanced Semantics. (3)

Semantic theory and applications including quantification, modality, aspect, presupposition, contexts, focus, polarity, and pragmatics. LING 603

655.Culture Teaching. (3)

Learning what culture is and how it functions in society. Practicing techniques and creating materials for teaching culture in ESL/EFL and foreign language classrooms. LING 610

660.Language Testing. (3)

Construction, analysis, use, and interpretation of language tests.

670.TESOL Teaching Skills: Reading, Writing, & Vocabulary. (3)

Processes involved in reading, writing, and vocabulary acquisition, emphasizing how these skills are developed in a second/foreign language. Ling 610.

671.TESOL Teaching Skills: Listening, Speaking, and Pronunciation. (3)

Processes involved in listening and speaking in a second language. Application of phonetic and phonemic study of American English pronunciation will be included. Ling 610.

677.Curriculum Development. (3)

Advanced language-teaching methodology and its classroom application. LING 612

678.Advanced Materials Development. (3)

Principles and procedures for designing, developing, and evaluating professional-quality language teaching/learning materials for various types: textbooks, software, audiovisual aids, etc. LING 612

679.TESOL Supervision-Administration Practicum. (3)

Actual fieldwork in TESOL settings involving supervision, in-service training, and program administration. LING 612

LINGUISTICS AND ENGLISH LANGUAGE

688R.Academic Internship: TESOL. (0.5-9)

Supervised field experience involving English language teaching, testing, or materials development in an approved domestic or international setting.

Admission to the TESOL graduate program.

695.TESOL Seminar. (1)

Integrating TESOL theory and practice; final preparation for TESOL career paths; refining and publicly presenting and defending thesis or project results.

Completion of majority of TESOL MA courses and not-yet-defended thesis or project.

698R.Master's Project. (1-3)

Design, production, and evaluation of MA project in Linguistics or TESOL. May involve various media: paper/print, computer software, audio recordings, or video recordings. Supervised by graduate advisory committee chair.

Completion of first-semester courses for TESOL MA students.

699R.Master's Thesis. (1-9)

Completion of first-semester courses for TESOL MA students.

FACULTY

Chapman, Don W. *Associate*

Professor, PhD, University of Toronto, Canada, 1995. Old English Language and Literature; History of the English Language; Medieval Literature

Clifford, Ray T. *Associate Dean*,

PhD, University of Minnesota, Minneapolis, 1977. Language Acquisition; Language Testing

Davies, Mark *Professor*, PhD,

University of Texas, Austin, 1992. Corpus Design and Use; Linguistic Databases; Historical Syntax and Syntactical Variation; Spanish and Portuguese

Dewey, Dan *Associate Professor*, PhD,

Carnegie Mellon, 2002. Second Language Acquisition; Language Acquisition, Japanese

Eckstein, Grant T. *Assistant Professor*

Eddington, David *Professor*, PhD, University of Texas, Austin, 1993. Experimental Linguistics; Phonology; Morphology; Spanish

Egbert, Jesse A *Assistant Professor*

Eggington, William G. *Professor*, PhD, University of South California, 1985. Varieties of English; Contrastive Rhetoric; Language Policy

Elzinga, Dirk A. *Associate Professor*, PhD, University of Arizona, 1999. Phonological Theory and Analysis; Uto-Aztecan Languages

Evans, Norman *Associate Professor*, EdD, University of Southern California, 2001. Writing in a Second Language; Curriculum Development; Language Program Administration and Assessment

Gardner, Dee *Professor*, PhD, Northern Arizona University, 1999. ESL Literacy; Applied Corpus Linguistics/Vocabulary Acquisition

Hallen, Cynthia *Associate Professor*, PhD, University of Arizona, 1991. Rhetoric, Lexicography; Philology; Stylistics; Poetics

Henrichsen, Lynn E. *Professor*, EdD, University of Hawaii, 1987. TESOL; Methodology; Materials Development; Teacher Education; ESL K-12; EFL

Lonsdale, Deryle *Associate*

Professor, PhD, Carnegie Mellon University, 1997. Formal Syntax and Semantics; Computational Linguistics; Salish Languages

Manning, Alan *Professor*, PhD,

Louisiana State University, 1988. Linguistics Theory; Information Design; Syntax

Nuckolls, Janis *Professor*, PhD,

University of Chicago, 1990. Quichua Grammar; Ideophony; Morphology; Anthropological Linguistics; Cultural Semantics; Discourse Pragmatics

Oaks, Dallin D. *Associate Professor*, PhD, Purdue University, 1990. English Linguistics; Structure of English; Ambiguity; Old English Language

Rawlins, Jacob D *Assistant Professor*

Skousen, Royal *Professor*, PhD, University of Illinois, 1972. Analogical Modeling; Textual Criticism

Baker Smemoe, Wendy *Associate Professor*, PhD, University of

Illinois, Urbana-Champaign, 2002. Second Language Acquisition; Psycholinguistics; Phonetics; Speech Perception and Production

Sturman, Heather *Assistant Professor*, PhD, University of California, Los Angeles, 2008. Syntax, K'iche; Marshallese

Tanner, Mark *Assistant Professor*, PhD, University of Pennsylvania, 1991. Language Acquisition; TESOL; Sociolinguistics

MATHEMATICS

Chair: Dorff, Michael J.

Graduate Coordinator: Bakker, Lennard F.

Associate Chair: Doud, Darrin M.

Associate Chair: Jenkins, Paul

275 TMCB, Provo, UT 84602-6539

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gradschool@math.byu.edu

<http://www.math.byu.edu>

THE PROGRAMS OF STUDY

The Department of Mathematics has approximately thirty-five graduate students, most of whom are supported by teaching assistantships. These students receive help with tuition as well as a stipend for the teaching support they provide in mathematics department service courses.

Two degrees are offered through the Department of Mathematics: Mathematics-MS; and Mathematics-PhD.

MS students study mathematics courses in preparation for careers in business, industry, government, or education. Other students use a master's degree in mathematics in preparation for a doctoral degree in mathematics or a closely related discipline or a discipline where technical competence is appreciated. Master's students graduate in an average of two years.

The PhD program requires about four years beyond a master's degree. The topic for a PhD dissertation may be chosen from faculty specialties, which include applied mathematics, algebraic geometry, geometric analysis, dynamical systems, number theory, geometric and low-dimensional topology, mathematical biology, group theory, algebra, and operations research.

Mathematics - PhD

The doctoral program prepares students for a career in research and teaching at the university level or in basic research in a nonacademic setting.

Requirements for Degree

Credit hours (54): minimum 36 course work hours in mathematics courses numbered 600 or above with a grade of B or better in each, plus 18 dissertation hours (Math 799R).

- Required courses: complete at least 3 hours each in algebra, analysis, applied mathematics, and geometry/topology.

- Examinations:

Written Examinations: In their first and second years the student needs to pass three qualifying exams. One of these must be in algebra or analysis; the student and his/her committee will determine the others. The material tested will be from Math 540/641 for analysis and Math 572/673 for algebra. For topology the courses would be Math 554/656. These exams will be offered in January, May and August of each year. Four hours are allotted to each examination. Syllabi are available for each examination.

Dissertation. A student seeking a doctor of philosophy degree must register for and complete a minimum of 18 hours of dissertation credit. No more than 18 hours may count toward the 54 hours required, and all 18 hours may not be taken in one term or semester. Registration for dissertation credit and work on the dissertation must be concurrent.

- *Defense of Dissertation:* A final oral defense of the dissertation is conducted by a faculty committee consisting of the student's research adviser, two other readers of the dissertation (one of whom may be an outside examiner) and two other members of the faculty.

FINANCIAL ASSISTANCE

Most of the graduate students in mathematics are supported by teaching assistantships. Current teaching assistants generally receive a salary as well as tuition support. For exact amounts of financial support and other details, contact the Mathematics Department online at <http://www.math.byu.edu/graduate> or by e-mail at gradschool@math.byu.edu.

RESOURCES AND OPPORTUNITIES

Faculty research interests currently include: algebra, algebraic geometry, applied mathematics, combinatorial and geometric group theory, dynamical systems, geometric and low-dimensional topology, mathematical biology, matrix analysis, number theory, numerical analysis, and partial differential equations.

For a more detailed description of the graduate program requirements, see www.math.byu.edu/graduate.

COURSE DESCRIPTION

MATH

500.(Math-Chem-C S-Geol-MthEd-Phscs-Stat) Business Career Essentials in Science and Math. (1.5)

Introduction for science, math, and statistics majors to careers in industry. Project planning, oral and written business presentations, business accounting, and technology readiness.

510.Numerical Methods for Linear Algebra. (3)

Numerical matrix algebra, orthogonalization and least squares methods, unsymmetric and symmetric eigenvalue problems, iterative methods, advanced solvers for partial differential equations. Math 410 or equivalent.

MATHEMATICS

511.Numerical Methods for Partial Differential Equations. (3)

Finite difference and finite volume methods for partial differential equations. Stability, consistency, and convergence theory.
Math 303 or 447; 410; or equivalents.

513R.Advanced Topics in Applied Mathematics. (3) Instructor's consent.

521.Methods of Applied Mathematics 1. (3)

Possible topics include variational, integral, and partial differential equations; spectral and transform methods; nonlinear waves; Green's functions; scaling and asymptotic analysis; perturbation theory; continuum mechanics.
Math 334 or equivalent.

522.Methods of Applied Mathematics 2. (3)

Possible topics include variational, integral, and partial differential equations; spectral and transform methods; nonlinear waves; Green's functions; scaling and asymptotic analysis; perturbation theory; continuum mechanics.
Math 521 or equivalent.

532.Complex Analysis. (3)

Introduction to theory of complex analysis at beginning graduate level. Topics: Cauchy integral equations, Riemann surfaces, Picard's theorem, etc.
Math 352 or instructor's consent.

534.Introduction to Dynamical Systems 1. (3)

Discrete dynamical systems; iterations of maps on the line and the plane; bifurcation theory; chaos, Julia sets, and fractals. Computational experimentation.
Math 334, 341; or equivalents.

540.Linear Analysis. (3)

Normed vector spaces and linear maps between them.

541.Real Analysis. (3)

Rigorous treatment of differentiation and integration theory; Lebesgue measure; Banach spaces.
Math 341; 314 or 342; or equivalents.

543.Advanced Probability 1. (3)

Foundations of the modern theory of probability with applications. Probability spaces, random variables, independence, conditioning, expectation, generating functions, and Markov chains.
Math 314 and Math 341; and Math 431 or Stat 370; or equivalents.

544.Advanced Probability 2. (3)

Advanced concepts in modern probability. Convergence theorems and laws of large numbers. Stationary processes and ergodic theorems. Martingales. Diffusion processes and stochastic integration.
MATH 543

547.Partial Differential Equations 1. (3)

Methods of analysis for hyperbolic, elliptic, and parabolic equations, including characteristic manifolds, distributions, Green's functions, maximum principles and Fourier analysis.
Math 334, 342; or equivalents.

553.Foundations of Topology 1. (3)

Naive set theory, topological spaces, product spaces, subspaces, continuous functions, connectedness, compactness, countability, separation axioms, metrization, complete metric spaces, function spaces, and Baire spaces.
Math 341 or equivalent.

554.Foundations of Topology 2. (3)

Fundamental group, retractions and fixed points, homotopy types, separation theorems, classification of surfaces, Seifert-van Kampen Theorem, classification of covering spaces, and applications to group theory.
Math 553 or instructor's consent.

561.Introduction to Algebraic Geometry 1. (3)

Basic definitions and theorems on affine, projective, and quasi-projective varieties.
Math 571 or concurrent enrollment.

562.Introduction to Algebraic Geometry 2. (3)

Local properties of quasi-projective varieties. Divisors and differential forms.
MATH 561

565.Differential Geometry. (3)

A rigorous treatment of the theory of differential geometry.
Math 342 or equivalent.

570.Matrix Analysis. (3)

Special classes of matrices, canonical forms, matrix and vector norms, localization of eigenvalues, matrix functions, applications.
Math 302 or 313 or equivalent.

571.Algebra 1. (3)

Group theory, ring theory.
Math 372 or equivalent.

572.Algebra 2. (3)

Modules, vector spaces, field theory, Galois theory.
MATH 571

586.Introduction to Algebraic Number Theory. (3)

Algebraic integers; different and discriminant; decomposition of primes; class group; Dirichlet unit theorem; Dedekind zeta function; cyclotomic fields; valuations; completions.
Math 372 or equivalent.

587.Introduction to Analytic Number Theory. (3)

Arithmetical functions; distribution of primes; Dirichlet characters; Dirichlet's theorem; Gauss sums; primitive roots; Dirichlet L-functions; Riemann zeta-function; prime number theorem; partitions.
Math 352 or equivalent.

621.Matrix Theory 1. (3)

Symmetric matrices, spectral graph theory, interlacing, the Laplacian matrix of a graph.
MATH 570

622.Matrix Theory 2. (3)

Research topics in combinatorial matrix theory.
MATH 621

634.Theory of Ordinary Differential Equations. (3)

Math 334, 341; or equivalents.

635.Dynamical Systems. (3)

MATH 634

640.Nonlinear Analysis. (3)

Differential calculus in normed spaces, fixed point theory, and abstract critical point theory.

641.Functions of a Real Variable. (3)

Abstract measure and integration theory; $L(p)$ spaces; measures on topological and Euclidean spaces.
Math 541 or instructor's consent.

643R.Special Topics in Analysis. (3)

Advanced topics in analysis drawn from pure and applied mathematics.
Math 641 or instructor's consent.

647.Theory of Partial Differential Equations 1. (3)

MATH 541 & MATH 547

651.Topology 1. (3)

Advanced topics in topology. Topics may include, but are not limited to, piecewise linear topology, 3-manifold theory, homotopy theory, differential topology, Riemannian geometry, and geometric group theory.
MATH 553 & MATH 554

652.Topology 2. (3)

Advanced topics in topology. Topics may include, but are not limited to, piecewise linear topology, 3-manifold theory, homotopy theory, differential topology, Riemannian geometry, and geometric group theory.
MATH 651

655.Differential Topology. (3)

Topological and smooth manifolds, tangent vectors, vector bundles, cotangent bundles, submersions, immersion, and embeddings of submanifolds, transversality, embedding and approximation theorems, differential forms, wedge products, exterior derivative, orientation, Stokes' theorem and integration on manifolds.
Math 342 or equivalent; Math 553 or equivalent.

656.Algebraic Topology. (3)

Fundamental group and homotopy, Von Kampen theorem, covering spaces, group actions, higher homotopy; simplicial, singular, and cellular homology, homology with coefficients, exact sequences, excision, Mayer-Vietoria; cohomology, universal coefficients, cup product, Poincare duality.
MATH 553

663.Algebraic Geometry 1. (3)

Basic definitions and theorems on varieties, sheaves, and schemes.
Math 676 or concurrent enrollment.

664.Algebraic Geometry 2. (3)

Cohomology of schemes. Classification problems. Applications.
MATH 663

673.Algebra 3. (3)

Topics from representation theory of finite groups and associative algebras. Groebner bases, homological algebra, tensor algebras, commutative rings, advanced finite group theory.
Math 572 or equivalent.

674.Lie Groups and Algebras. (3)

Basic concepts of Lie Groups and algebras including root systems, algebraic groups, and representation theory.
MATH 673

675R.Special Topics in Algebra. (3)

MATH 572

676.Commutative Algebra. (3)

Commutative rings, modules, tensor products, localization, primary decomposition, Noetherian and Artinian rings, application to algebraic geometry and algebraic number theory.
MATH 572

677.Homological Algebra. (3)

Chain complexes, derived functors, cohomology of groups, ext and tor, spectral sequences, etc. Application to algebraic geometry and algebraic number theory.
MATH 572

686R.Topics in Algebraic Number Theory. (3)

Current topics of research interest.
MATH 372; Permission of the instructor.

687R.Topics in Analytic Number Theory. (3)

Current topics of research interest.
Math 352, 487; or equivalents.

695R.Readings in Mathematics. (1-2)

698R.Master's Project. (2)

699R.Master's Thesis. (1-9)

751R.Advanced Special Topics in Topology. (3)

Current topics in topology of research interest.
MATH 652

799R.Doctoral Dissertation. (1-9)

FACULTY

Baker, Roger C. *Professor*, PhD,
University of London, 1971.
Number Theory

MATHEMATICS

- Bakker, Lennard F.** *Associate Professor*, PhD, Queens University, 1997. Dynamical Systems; Celestial Mechanics
- Cardon, David A.** *Professor*, PhD, Stanford University, 1996. Number Theory
- Chahal, Jasbir S.** *Professor*, PhD, Johns Hopkins University, 1979. Number Theory
- Chow, Shue-Sum** *Associate Professor*, PhD, Australian National University, 1983. Numerical Analysis
- Conner, Gregory R.** *Professor*, PhD, University of Utah, 1992. Geometric Group Theory; Combinatorial Group Theory; Topology
- Dallon, John C.** *Professor*, PhD, University of Utah, 1996. Mathematical Biology
- Dorff, Michael J.** *Professor*, PhD, University of Kentucky, 1997. Geometric Function Theory; Complex Analysis; Minimal Surfaces
- Doud, Darrin M.** *Professor*, PhD, University of Illinois, 1999. Number Theory
- Evans, Emily J.** *Assistant Professor*, PhD, Worcester Polytechnic Institute, 2011. Applied Mathematics; Numerical Analysis
- Fisher, Todd** *Associate Professor*, PhD, Northwestern University, 2004. Dynamical Systems
- Forcade, Rodney W.** *Professor*, PhD, University of Washington, 1971. Combinatorics
- Glasgow, Scott A.** *Associate Professor*, PhD, University of Arizona, 1993. Optics; Classical and Quantum
- Grant, Christopher P.** *Associate Professor*, PhD, University of Utah, 1991. Nonlinear Partial Differential Equations; Dynamical Systems
- Halverson, Denise M.** *Professor*, PhD, University of Tennessee, 1999. Geometric Topology
- Humpherys, Jeffrey C.** *Associate Professor*, PhD, Indiana University, 2002. Applied Mathematics
- Humphries, Stephen P.** *Professor*, PhD, University of Wales, 1983. Low-Dimensional Topology; Classical Groups; Representation Theory
- Jarvis, Tyler J.** *Professor*, PhD, Princeton University, 1994. Algebraic Geometry
- Jenkins, Paul** *Assistant Professor*, PhD, University of Wisconsin-Madison, 2006. Number Theory; Modular Forms; Partitions
- Kuttler, Kenneth L.** *Professor*, PhD, University of Texas, Austin, 1981. Abstract Methods for Nonlinear Partial Differential Equations and Inclusion
- Lawlor, Gary R.** *Associate Professor*, PhD, Stanford University, 1988. Geometric Measure Theory and Area Minimization
- Li, Xian-Jin** *Professor*, PhD, Purdue University, 1993. Number Theory
- Lu, Kening** *Professor*, PhD, Michigan State University, 1988. Applied Mathematics; Nonlinear Partial Differential Equations; Dynamical Systems
- Nielsen, Pace** *Assistant Professor*, PhD, University of California, Berkley, 2006. Algebra; Number Theory
- Ouyang, Tiancheng** *Professor*, PhD, University of Minnesota, 1989. Partial Differential Equations
- Roundy, Robin O.** *Professor*, PhD, Stanford University, 1984. Operations Research
- Swenson, Eric L.** *Associate Professor*, PhD, Brigham Young University, 1993. Geometric Group Theory
- Villamizar, Vianey** *Associate Professor*, PhD, Rensselaer Polytechnic Institute, 1987. Applied Mathematics; Wave Scattering; Scientific Computing
- Webb, Benjamin** *Assistant Professor*, PhD, Georgia Institute of Technology, 2011. Dynamical Systems; Applied Mathematics
- Whitehead, Jared P.** *Assistant Professor*, PhD, University of Michigan, 2012. Applied Mathematics; Partial Differential Equations; Scientific Computing; Dynamical Systems

MATHEMATICS EDUCATION

Chair: Peterson, Blake E.
Associate Chair: Leatham, Keith R.
Graduate Coordinator: Corey, Douglas L.

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<http://mathed.byu.edu>

THE PROGRAMS OF STUDY

The Department of Mathematics Education offers a program of graduate study that leads to a Master of Arts degree in Mathematics Education. Through the experiences this program offers, graduate students extend their own understanding of mathematics and deepen their understanding of learners' mathematical thinking. The department values close, detailed mentoring of each graduate student as an active member of the scholarly community - a community devoted to exploration and inquiry into the learning and teaching of mathematics. Our program emphasizes interactions with faculty (both in and out of the classroom) that (a) allow students to explore new mathematical understanding in both personal and social contexts; (b) immerse students deeply in exploration, inquiry, analysis and exposition; and (c) familiarize students with the ever-expanding body of research literature on learning and teaching mathematics and with prevailing research methodologies. The cumulative experiences of our program prepare graduates to enter top mathematics education doctoral programs, to take on important leadership roles in school mathematics education communities, and to return to classrooms better equipped to teach lessons that are informed by students' mathematical thinking.

Mathematics Education - MA

Our program offers both thesis and project options.

Requirements for Degree-Thesis Program.

- Credit hours (30): minimum of 24 credit hours of approved course work plus 6 thesis hours (MthEd 699R).
- Required courses: MthEd 590, 591; and 3 credit hours of 611R; 9 additional credit hours of approved 500- or 600-level mathematics education coursework.
- Electives: 6 credit hours of approved graduate level coursework (no more than 3 credits of readings course 695R).
- Comprehensive examination: pass a written comprehensive examination. Full-time students take the exam in May following their first year; part-time students take the exam in May following their second year.
- Thesis: write a thesis based on an approved research project. Note: A formal thesis proposal and defense is required.
- Oral defense of thesis.
- Minor (optional): any approved minor.

Requirements for Degree-Project Program.

- Credit hours (30): minimum of 27 credit hours of approved coursework plus 3 project hours (Math 698R).
- Required courses: MthEd 590, 591; and 3 credit hours of 611R; 12 additional credit hours of approved 500- or 600-level mathematics education courses.
- Electives: 6 credit hours of approved graduate level coursework (no more than 3 credits of readings course 695R).

- Comprehensive examination: pass a written comprehensive examination. Full-time students take the exam in May following their first year; part-time students take the exam in May following their second year.
- Project paper: write a paper based on an approved project. Note: A formal project proposal and defense is required.
- Oral defense of project paper.
- Minor (optional): any approved minor.

FINANCIAL ASSISTANCE

We see our graduate students as part of the department's active research and teaching community. Thus most full-time graduate students receive support from our department in the form of teaching assistantships. This support includes (a) a stipend, for which the recipient performs teaching duties requiring 20 hours per week and (b) a tuition scholarship for program courses. Information on current levels of support is available from the department.

RESOURCES AND OPPORTUNITIES

The research interests and active projects of the mathematics education faculty touch all levels of mathematics learning and learners. Designed as "research internships in mathematics education," the MA program gives each graduate student opportunities to engage with faculty in one or more research settings.

See <https://mathed.byu.edu/graduate/ma-overview-2/>

for a more detailed description of the graduate program in mathematics education.

COURSE DESCRIPTION

MTHED

550.Problem Solving. (3)

Solving and building explanations and presenting solutions to conceptually important problems. Analyzing research on problem solving and its role in teaching and learning mathematics. Strong background in undergraduate mathematics; instructor's consent.

562.Euclidean Geometry: Content, Learning, and Teaching. (3)

Euclidean geometry, including classical problems, polyhedra, transformations, congruence, similarity, integer geometry, minimization; technology in geometry, Van Hiele levels, role of proof, and high school curriculum. MthEd 362 or equivalent.

590.Foundational Issues in Learning Mathematics. (3)

Introduction to research in mathematics learning; mathematical thinking; cognitive, social, and philosophical approaches to describing mathematics learning. Teaching certificate or completion of student teaching.

591.Scholarly Inquiry in Mathematics Education. (3)

Introduction to scholarly inquiry in mathematics education; issues in research methodology. MTHED 590

598R.Topics in Mathematics Education. (0.5-3)

Includes specific research areas and curriculum studies of school mathematics topics (i.e. geometry, algebra, and calculus). Instructor's consent.

608.Technology for Learning and Teaching Mathematics. (3)

Analyzing research relative to learning mathematics with technology; exploring mathematical problems using technology; design curriculum; conducting research in the learning and teaching of mathematics with technology. BA in mathematics education or equivalent; MthEd 308 or equivalent.

611R.Graduate Student Seminar. (1)

Reading, discussing, and writing about relevant public discourse, policies, and issues in the broad arena of mathematics education. Instructor's consent.

660.Number and Number Sense. (3)

Research on children's understanding of early numbers, number operations, number sense, multidigit arithmetic, fractions, decimals, and proportions. BA in mathematics education or equivalent.

661.Algebraic Reasoning. (3)

Fundamental concepts (e.g., variables, equality, pattern recognition, function, covariation, equations), processes (e.g., mathematizing, generalizing, modeling), and research in algebraic reasoning. BA in mathematics education or equivalent.

663.Calculus Teaching and Learning. (3)

Fundamental calculus concepts as well as the curricula, reform efforts, and research associated with teaching and learning calculus. BA in mathematics education or equivalent.

695R.Readings in Mathematics Education. (0.5-3)

Instructor's consent.

698R.Master's Project. (1-3)

Instructor's consent.

699R.Master's Thesis. (0.5-9)

Instructor's consent.

FACULTY

Corey, Douglas L. Associate

Professor, PhD, University of Michigan, 2007. Interests include understanding the characteristics of high-quality mathematics instruction and understanding what mathematical knowledge is needed to help students develop mathematical understanding

Johnson, Kate R. Assistant Professor,

PhD, Michigan State University, 2013. Research interests are the identities of mathematics teachers in the context of teaching mathematics in ways that illuminate social inequity and empower students to seek social change

Jones, Steven R. Assistant Professor,

PhD, University of Maryland, 2010. Research interests include focus on undergraduate mathematics and applying mathematics to science and engineering

Leatham, Keith R. Associate Professor,

PhD, University of Georgia, 2002. Research interests are on understanding the complexities of teaching and learning to teach mathematics

Peterson, Blake E. Professor, PhD,

Washington State University, 1993. Research interests are on the process of learning to teach mathematics in the United States and in Japan

Siebert, Daniel K. Associate Professor,

PhD, University of California, San Diego, 2000. Research interests include discourse and literacy in mathematics classrooms

Teuscher, Dawn Assistant Professor,

PhD, University of Missouri-Columbia, 2008. Research interests include how national policy influences mathematics teachers and how mathematics curriculum influences teachers and students

Williams, Steven R. *Professor, PhD,*
University of Wisconsin, Madison,
1989. Research interests include
advanced mathematical thinking
(including calculus concepts,
advanced algebra and proof),
and sociocultural approaches
to knowledge and classroom
discourse

MECHANICAL ENGINEERING

Chair: Maynes, R. Daniel
Graduate Coordinator: Bowden,
Anton E.

435 CTB, Provo, UT 84602-4201
(801) 422-2625
<http://www.me.byu.edu>

THE PROGRAMS OF STUDY

The Department of Mechanical Engineering offers strong graduate programs in a variety of areas, including combustion processes; computational and experimental fluid mechanics; dynamic and mechatronic systems and controls; heat transfer; product design and development; manufacturing systems and processes; materials and materials processing; optimization; micromechanical systems; biomechanics; aerospace; renewable energy; CAM/CAD; and robotics. Specific research activities in these areas are described on the Mechanical Engineering Department Web page at <http://www.me.byu.edu>.

The Mechanical Engineering Department offers two graduate degrees: Mechanical Engineering-PhD and Mechanical Engineering-MS.

The Mechanical Engineering Department and the Marriott School of Management offer a joint program leading to a master of science (MS) degree in mechanical engineering and a master of business administration (MBA) degree.

The graduate program in mechanical engineering has about 100 graduate students. The typical time required to obtain an MS degree is approximately two years, whereas a PhD degree usually requires about five years beyond the BS degree. The joint MS/MBA program generally takes about three years to complete.

Mechanical Engineering - PhD

The purpose of the PhD program in the Department of Mechanical Engineering is to provide a world-class education to doctoral students, in an atmosphere enlightened by the principles of the gospel. Specifically the purpose of this program is to produce graduates who:

- Eagerly pursue lifelong learning through study and faith in professional, religious and personal aspects of life.
- Understand the fundamental concepts of math, science, and engineering, particularly as they apply to thermal and mechanical systems.
- Implement the fundamental principles of engineering through hands-on design and analysis, using modern engineering tools and practices, to solve complex, real-world engineering problems with high standards of personal and professional ethics.
- Demonstrate leadership in a specific sub-discipline of mechanical engineering through the development of new knowledge and practices.
- Confidently present their intellectual efforts in a technical forum of professionals in their area of expertise.
- Express faith in God and a desire to serve Him through lifelong service to family, church, profession and community.
- Credit hours:
- *For students with an approved MS:* a minimum of 36 credit hours beyond the MS, which includes 18 hours of dissertation credit. The remaining 18 hours are graduate-level coursework, half of which must be in mechanical engineering and none of which can be project credit.

MECHANICAL ENGINEERING

- *For students entering directly from the BS:* a minimum of 54 credit hours beyond the BS, which includes 18 hours of dissertation credit. The remaining 36 hours are graduate-level coursework, half of which must be in mechanical engineering and none of which can be project credit.
- **Program of Study:** a study list must be submitted during the second semester of doctoral study. All coursework will be approved on the basis of how to best fulfill research needs, career goals, and integrity of the mechanical engineering program.
- **PhD qualifying examination.** For students with an MS, the examination must be taken no later than the second offering of the exam during the PhD program. For students entering directly from the BS, the examination must be taken no later than the third offering of the exam during the PhD program. Exams are administered in March and September of each year. The written examination may be retaken only once.
- **Prospectus:** a written prospectus should be defended and submitted no later than the first anniversary of passing the qualifying examination. The prospectus must be approved at least one year prior to the dissertation oral examination.
- **Biannual Evaluations:** each student's progress will be evaluated twice a year, in January and May. Satisfactory progress must be maintained in order to remain in the program.
- **Residency:** work toward the PhD must be completed under the direction of a graduate faculty advisor while the student is in residence at BYU for at least two consecutive semesters of 6 or more hours of registration. "In residence" is defined as living and conducting research in the general vicinity of the university, where the student has ready access to research facilities and consultation with the faculty.
- **Graduate Seminar:** all doctoral students are required to attend 8 graduate seminars each semester, for two semesters. The seminars include technical presentations by graduate students, faculty members, and invited guests.
- **Dissertation:** A written dissertation describing significant original research must be completed and approved. A maximum of 18 hours of dissertation credits (Me En 799R) may count toward the PhD. All work toward the dissertation must be completely open for public review and publication. Exceptions must have written approval from the department and college in advance of any work performed.
- **Defense:** all PhD students are required to pass an oral examination of their dissertation research.
- **Time limit:** the PhD student has eight years maximum to complete the degree.
- **GPA:** PhD students must have a cumulative 3.0 GPA or above in all courses counted toward the PhD degree.

Please see the PhD Handbook at <http://me.byu.edu/content/phd-mechanical-engineering> for more details regarding requirements.

FINANCIAL ASSISTANCE

Many graduate students work in the ME department as teaching assistants (TA) or as research assistants (RA). Department scholarship money is also available for graduate students. Funding for assistantships and scholarships is administered by individual faculty members.

COURSE DESCRIPTION

ME EN

500.(MeEn-CEEn) Design and Materials Applications. (3)

Materials selection in design; effects of materials properties, structure and geometry on performance; process selection and property modification techniques; basics of material failure mechanism. Ce En 321 or Me En 372; Ce En 203; Me En 250; or equivalents.

501.(MeEn-CEEn) Stress Analysis and Design of Mechanical Structures. (3)

Stress analysis and deflection of structures; general bending and torsion, with computer applications to mechanical and aerospace structure design. ME EN 372; or CE EN 321

503.(MeEn-CEEn) Plasticity and Fracture. (3)

Tensor algebra; stress and deformation tensors; relationships between dislocation slip, yielding, plastic constitutive behavior, and microstructure development; cracks and linear elastic fracture mechanics. ME EN 250 & CE EN 203

504.(Me En-CE En) Computer Structural Analysis and Optimization. (3)

Matrix stiffness method for 1D, 2D, and 3D skeletal structure classes. Implementing the matrix stiffness method as a computer program. Nonlinear second-order structural analysis. Structural optimization techniques including stress-ratio method, gradient-based methods, and genetic algorithms. ME EN 372 & MATH 302; or ME EN 372 & MATH 313; or CE EN 321 & MATH 313

505.Applied Engineering Math. (3)

Advanced engineering mathematics that builds a foundation for graduate mechanical engineering courses and research. Topics include tensor analysis, vector calculus, and solution methods for partial differential equations. MATH 303; or MATH 334; or equivalent.

507.(Me En-CE En) Linear Finite Element Methods. (3)

Linear static finite element analysis of elastic solids; problem formulation, finite element discretization, and equation solving; stability, interpolation theory, and error estimates. Introduction to underlying continuum mechanics principles. Isogeometric analysis as a generalization of classical finite element analysis; basic principles of analysis-suitable computational geometry. ME EN 372; or CE EN 321

510.Compressible Fluid Flow. (3)

One-dimensional analysis of compressible flow with area change, friction, heat transfer, shock waves, and combined effects, including experimental methods. ME EN 312; Me En 312 or equivalent.

512.Intermediate Fluid Dynamics. (3)

Fluid transport properties, review of integral analysis, Navier-Stokes equations, exact and similarity solutions, boundary layers, vorticity, jets and wakes. ME EN 312; or instructor's consent, Me En 505 previous or concurrent enrollment.

521.Intermediate Thermodynamics. (3)

Review of first and second law analysis; exergy; equations of state and other thermodynamic relations; properties of mixtures and multiphase systems; chemical reactions and equilibrium. ME EN 321

522.Combustion. (3)

Introduction to first- and second-law ideal gas combustion systems along with elementary models of homogeneous and heterogeneous premixed and/or diffusion flames. CHEM 105 & ME EN 340 & ME EN 422; or CH EN 373 & CH EN 376

523.(Me En-CE En) Aircraft Structures. (3)

Requirements, objectives, loads, materials, and tools for design of airframe structures; static behavior of thin-wall structures; durability and damage tolerance; certification and testing. Airframe component team design project. CE EN 304 & CE EN 321; or ME EN 250 & ME EN 372

534.Dynamics of Mechanical Systems. (3)

Hamiltonian and Lagrangian dynamics, generalized coordinates, linear and angular momentum, Euler angles, rigid-body motions, and gyroscopic effects. Theory taught with applications integrated. ME EN 335

535.Mechanical Vibrations. (3)

Introduction to energy methods for system modeling, eigenvalues and mode shapes, frequency response, and spectral characterization of vibrations. ME EN 335; or equivalent.

537.Advanced Mechanisms, Robotics. (3)

Kinematics and dynamics of advanced mechanisms, such as robots, with computer simulation of mechanism motion. ME EN 437; or equivalent.

538.Compliant Mechanisms. (3)

Design and analysis of compliant mechanisms and compliant structures. Large-deflection analysis/force displacement relationships; mechanisms synthesis. ME EN 372; Me En 475 or concurrent enrollment; or instructor's consent.

540.Intermediate Heat and Mass Transfer. (3)

Analytical approaches to conduction, convection, and radiation heat transfer. Introduction to mass transfer. ME EN 340; or equivalent; concurrent enrollment in Me En 505.

541.Computational Fluid Dynamics and Heat Transfer. (3)

Fluid dynamics and heat transfer analysis by numerical methods. Theory and implementation of finite difference and finite volume methods. ME EN 312 & ME EN 340; or instructor's consent.

550.(Me En-EC En) Microelectromechanical Systems (MEMS). (3)

Design, fabrication, and applications of MEMS. Mechanical properties governing their design and reliability and the processing technologies used to fabricate them. EC EN 450; or ME EN 372; or equivalent.

552.Neuromechanics of Movement. (3)

Biomechanics and neural control of human movement. Dynamics of neuromusculoskeletal system; human-machine interaction; movement disorders and assistive/rehabilitative technology; current research techniques. ME EN 335; or instructor's consent.

MECHANICAL ENGINEERING

555.Introduction to Biomechanical Engineering. (3)

Mechanics of biological systems. A continuum mechanics-based approach to the structure, function, mechanical response, and active remodeling of hard and soft tissues of the body.
ME EN 372; or equivalent.

556.Materials Modeling: Methods in Atomistic, Mesoscale, and Continuum Simulations. (3)

Theory and application of various computer simulations to model, understand, and predict the properties of real materials. Specific topics include: first-principles atomistic models, empirical potential atomistic models, mesoscale models, and continuum finite element analysis.
ME EN 452

558.Metallurgy. (3)

Fundamental principles of physical metallurgy and their application to design.
ME EN 250; or instructor's consent.

561.(Me En-Phscs) Fundamentals of Acoustics. (3)

Vibrating systems, elastic media, mechanical energy, and radiation. Sound generation, transmission, reflection, and reception.
PHSCS 318; or equivalent; Phscs 461 or concurrent enrollment.

562.(Me En-Phscs 660) Acoustic Systems. (3)

Analyzing and modeling electro-mechano-acoustic systems. Transducers, calibration, and acoustical measurements. Sound sources, arrays, coupling, radiation, and directivity. Duct acoustics and acoustic filters.
PHSCS 561; or instructor's consent.

570.(Me En-CE En) Computer-Aided Engineering Software Development. (3)

Programming methods for development of engineering software. Data structures, architecture, libraries, and graphical user interfaces, with applications to CAD systems.
ME EN 373; or ME EN 273; or C programming.

574.Product Development Automation. (3)

Design automation, network modeling of design systems, mass customization, agent-based methods, transnational design systems. Aerospace, automotive, and consumer product applications.
ME EN 476; Me En 475; or equivalents.

575.(Me En-CE En) Optimization Techniques in Engineering. (3)

Application of computational optimization techniques to constrained engineering design. Theory and application of gradient-based and gradient-free algorithms for unconstrained and constrained nonlinear problems. Robust design methods.
MATH 302; or MATH 313; C, C++, or similar computer language.

576.Product Design. (3)

Emerging design methodology and design strategies for complex systems, including decomposition methods and sensitivity analysis. Advanced CAD/CAE/CAM technologies applied to design.
ME EN 475; or instructor's consent.

578.CAD/Cam Applications. (3)

Principles and practices involved in parametric surface and solid modeling, associativity, NC tool path generation, etc. Construction of complete CAD models for design, analysis, and manufacture.
ME EN 471 & ME EN 570

579.Global Product Development. (3)

Preparing students to be leaders in globally-influenced product development organizations. Includes visits to U.S. and overseas companies and universities.
ME EN 476; Me En 475 or equivalents; senior or graduate status.

585.Manufacturing Competitiveness: Quality and Productivity. (3)

Production strategies to improve quality, decrease cost, and increase throughput to create market advantage; effective production management systems; applying quality improvement tools to process data; theory of constraints and lean production.
ME EN 282; or ME EN 382

595R.Topics in Materials. (0.5-18)

Departmental consent.

595R.Topics in Mechanical Design. (0.5-18)

Departmental consent.

595R.Special Topics in Mechanical Engineering. (0.5-18)

Departmental consent.

602.(Me En-CE En) Composite Structures. (3)

Design and analysis of advanced composite structures; deflections, buckling, and vibration of thin plates and sandwich plates; design guidelines; design examples; project.
ME EN 372; or CE EN 304

604.(Me En-CE En) Continuum and Solid Mechanics. (3)

Derivation of partial differential equations of continuum mechanics. Closed-form solution of classical problems in elasticity. Theory of beams, plates, and axisymmetric shells with closed-form solutions. Large displacement strain tensors, stress tensors, equilibrium equations, beam theory, and plate theory. Constitutive theory including nonlinear elasticity, viscoelasticity, plasticity, and hyperelasticity.
ME EN 372; or CE EN 321

607.(Me En-CE En) Nonlinear Finite Element Methods. (3)

Nonlinear dynamic finite element analysis of solids. Nonlinear continuum mechanics, finite element formulation, and elementary solution algorithms for nonlinear algebraic problems. focusing on hyperelastic solids. Advanced topics in isogeometric analysis, computational analysis-suitable geometry, and adaptivity. An introduction to dynamics; basic methods of time integration, such as Newmark and alpha methods.
ME EN 507; or CE EN 507

611.Turbulence. (3)

Introduction to turbulence, flow instability and transition, concept of scale, Reynolds averaging, wall-bounded and free shear flows, closure modes, and measurement techniques.
ME EN 512

612.Environmental Fluid Dynamics. (3)

Fluid dynamics of the atmosphere and oceans related to free surface, two layer, and continuously stratified flows emphasizing linear and nonlinear free-surface and internal gravity waves.
Me En 512 or instructor's consent.

613.Experimental Fluid Mechanics. (3)

Experimental methods for analyzing fluid flow and heat transfer. Theory and application of techniques in velocimetry, pressure sensing, thermometry, and flow visualization.
Me En 312 or equivalent.

633.(Me En-EC En 673) Digital Control Systems. (3)

Design of digital controllers for dynamical systems, analysis using the z-transform, digital filter implementation, application of transform-based classical design methods, and modern state-space techniques.
Me En 431 or EC En 483 or equivalent.

634.(Me En-EC En 674) Flight Dynamics and Control. (3)

Dynamics of flight, stability, and control derivatives, longitudinal and lateral control design; state-space control strategies for aircraft; and unmanned air vehicle applications. Me En 431 or EC En 483 or equivalent.

642.Radiative Heat Transfer. (3)

Advanced engineering analysis of radiant heat exchange between surfaces, in enclosures, and in absorbing, emitting, and scattering media.
ME EN 540

643.Convective Heat Transfer (3)

Advanced engineering analysis of convective heat transfer in internal and external laminar and turbulent flows.
ME EN 512; or equivalent.

651.Microstructure and Properties. (3)

Representations of inhomogenous material microstructure, crystallography, orientation distribution functions, Fourier representations, bounding theories for defect-insensitive properties, grain boundaries and grain boundary engineering, microstructure sensitive design.
ME EN 500

671.Advanced Strategies for Product Development. (3)

Theory of advanced strategies for product development. New concepts developed, tested, and applied to real products.
MeEn 475 or instructor's consent.

673.Advanced Design Tool Development. (3)

Development and implementation of advanced tools and methods for mechanical design.
MeEn 570 and instructor's consent.

684.Production System Design. (3)

Designing manufacturing systems for competitive advantage. Factory layout, simulation and design, and tooling design. Integration of manufacturing design into product development process.
MeEn 671 or instructor's consent.

695R.Special Problems for Master's Students (1-3)

Department chair's consent.

699R.Master's Thesis. (1-9)**733.(Me En-EC En 773) Linear System Theory. (3)**

Mathematical introduction to time-varying linear systems; state-space descriptions, controllability, observability, Lyapunov stability, observer-based control. Design of linear quadratic regulators and infinite-horizon Kalman filters.
EC EN 671; Me En 431 or EC En 483 or equivalent.

734.(Me En-EC En 774) Non-Linear System Theory. (3)

Mathematical introduction to non-linear dynamic systems. Topics include Lyapunov methods, passivity, input-output stability, and non-linear feedback design.
EC EN 671; Me En 431 or EC En 483 or equivalent.

795R.Selected Topics in Mechanical Engineering. (1-3)**799R.Doctoral Dissertation. (1-18)****FACULTY**

Adams, Bradley Associate Professor, PhD, University of Utah, 1993. Combustion, Radiative Heat Transfer

Blotter, Jonathan D. Professor, PhD, Virginia Polytechnic Institute and State Univ, 1996. Experimental Mechanics, Vibrations and Acoustics

Bowden, Anton E. Associate Professor, PhD, University of Utah, 2003. Biomechanics, Continuum Mechanics, Nonlinear FEA, Biomaterials

MECHANICAL ENGINEERING

Bowman, W. Jerry *Associate Teaching Professor*, PhD, Air Force Institute of Technology, 1987. Aerodynamics

Charles, Steven K. *Assistant Professor*, PhD, Harvard-MIT Division of Health Sciences and Technology, 2008. Biomechanics and Neural Control of Movement

Colton, Mark B. *Associate Professor*, PhD, University of Utah, 2006. Haptic Interfaces; Dynamic Systems, Robotics

Crockett, Julie *Assistant Professor*, PhD, University of California, San Diego, 2007. Fluid Mechanics, Geophysical Fluid Flow

Fullwood, David *Professor*, PhD, University of London, 1992. Composites; Computational Methods for Materials, Material Design, Microscopy

Gorrell, Steven E. *Associate Professor*, PhD, Iowa State University, 2001. Experimental and Computational Fluid Dynamics, Turbomachinery

Homer, Eric R. *Assistant Professor*, PhD, Massachusetts Institute of Technology, 2010. Computational Materials Science and Engineering; Materials Modeling

Howell, Larry L. *Professor*, PhD, Purdue University, 1993. Compliant Mechanisms and Rigid-body Mechanisms

Iverson, Brian D. *Assistant Professor*, PhD, Purdue University, 2008. Thermal Radiation Absorption and Chemical Sensing

Jensen, Brian D. *Associate Professor*, PhD, University of Michigan, 2004. Microelectromechanical Systems (MEMS), Biological MEMS

Johnson, Oliver *Assistant Professor*, PhD, Massachusetts Institute of Technology, 2015. Microstructure Modeling & Design; Grain Boundary Networks; Synthesis of Advanced Materials

Jones, Matthew R. *Associate Professor*, PhD, University of Illinois, 1993. Heat Transfer, Energy, Inverse Problems

Killpack, Marc D. *Assistant Professor*, PhD, Georgia Institute of Technology, 2013. Robotics; Controls, Haptic Sensing

Magleby, Spencer P. *Professor*, PhD, University of Wisconsin, Madison, 1988. Engineering Design, Product Development; Compliant Mechanisms

Mattson, Christopher A. *Associate Professor*, PhD, Rensselaer Polytechnic Institute, 2003. Multi-Objective Optimization, Product Development; Conceptual Engineering Design

Maynes, R. Daniel *Professor*, PhD, University of Utah, 1997. Fluid Mechanics, Transport Phenomena

McLain, Timothy W. *Professor*, PhD, Stanford University, 1995. Dynamic Systems, Controls, Autonomous Air Vehicles

Nelson, Tracy W. *Professor*, PhD, Ohio State University, 1998. Materials and Joining

Ning, S. Andrew *Assistant Professor*, PhD, Stanford University, 2011. Multidisciplinary Optimization, Aerodynamics, Wind Energy, Aeronautics

Parkinson, Alan R. *Professor*, PhD, University of Illinois, 1982. Optimization, Computer-Aided Engineering, Robust Design Methods

Red, W. Edward *Professor*, PhD, Arizona State University, 1972. Automation, Advances Computer-Aided Applications

Salmon, John *Assistant Professor*, PhD, Georgia Institute of Technology, 2013. Systems Engineering, Design and Optimization, Computer-Aided Engineering

Sorensen, Carl D. *Professor*, PhD, Massachusetts Institute of Technology, 1985. Design for Manufacture, Manufacturing Processes, Friction Stir Welding

Tree, Dale R. *Professor*, PhD, University of Wisconsin, Madison, 1992. Coal and Biomass Combustion, Internal Combustion Engines

Webb, Brent W. *Professor*, PhD, Purdue University, 1986. Heat Transfer

MICROBIOLOGY AND MOLECULAR BIOLOGY

Department Chair: Robison, Richard A.

Graduate Coordinator: Griffiths, Joel

4007 LSB, Provo, UT 84602-5253
(801) 422-2889
<http://mmbio.byu.edu>

THE PROGRAMS OF STUDY

The fields of microbiology and molecular biology are closely intertwined and are at the center of some of the most exciting current advances in the biological sciences. With the sequencing of various host and microbial genomes, and the acceleration of technologies for functional genomics and microbial community evaluation, opportunities for significant advances are open to students in our programs.

Graduate programs in Microbiology and Molecular Biology (MMBio) emphasize a combination of coursework and laboratory experience with an emphasis on the latter. Students are expected to produce a significant body of original research. Our students regularly collaborate on interdisciplinary projects with faculty and students outside of our department. Supporting courses in microbiology and molecular biology may include appropriate courses from various departments in the colleges of Life Sciences, and Physics and Mathematical Sciences. Completion of MMBio degree programs in the department qualifies students for further graduate study at other universities; employment in educational, industrial, medical, and research institutions; or postdoctoral opportunities leading to careers as research or academic scientists.

The Department of Microbiology and Molecular Biology offers two degrees: Microbiology and Molecular Biology-MS, and Microbiology and Molecular Biology-PhD. Typically there are about thirty graduate

students in the department at any time. Approximately one half are PhD students and the rest are M.S. students. Average times in the programs are about two years for an MS degree, about three years beyond a master's for the PhD degree, and about five years for the PhD, going directly from the bachelor's without the master's degree.

Microbiology and Molecular Biology
- PhD

Requirements for Degree

Credit hours: candidates without a master's degree: 54 semester hours beyond the baccalaureate, including no more than 18 hours of dissertation credit. Minimum of 36 hours beyond master's degree, including 18 hours of dissertation (MMBio 799R).

- Required courses: Bio 503, MMBio 661, 663, 665, 691R, 692R; Electives: 3.0-6.0 coursework elective credits, MMBIO 695R, 18 credits of MMBIO 799R, Dissertation
- Elective course list:
- MMBIO 510
- MMBIO 512
- MMBIO 514
- MMBio 516
- MMBIO 518
- MMBIO 520
- MMBIO 522
- MMBIO 528R
- MMBIO 551R
- Semiannual progress reviews.
- Presentation of research at an annual retreat.
- Qualifying Examination: Student will be required to pass the qualifying exam. This includes (1) written outside grant proposal outside the area of expertise, and (2) oral exam on coursework and grant defense.
- Dissertation: standard university dissertation or a journal publication.

- Public seminar and oral defense of dissertation.

FINANCIAL ASSISTANCE

Teaching and research assistantships are offered by the department.

RESOURCES AND OPPORTUNITIES

Electron Optics Laboratory.

Researchers can accomplish all standard electron optics procedures. The laboratory has transmission and scanning electron microscopes equipped with X-ray microanalysis capabilities, plus accessory equipment for freeze-fracture, freeze-drying, and necessary support facilities, including confocal laser scan microscopy.

Research Instrumentation Core (RIC) Facility.

The RIC houses specialized equipment for use by researchers at BYU. It is equipped with a flow cytometer analyzer and sorter, imaging systems for gels and blots, high-speed centrifuge, plate readers for fluorescence, luminescence, absorbance and radioactivity detection, fluorescent microscope with digital imaging capacity, nanodrop spectrophotometer, microarray scanner, and gas chromatography microbial identification system.

DNA Sequencing Center provides advanced, efficient, and economical services for DNA sequence and DNA fragment acquisition and analysis. Equipment includes illumina Hi-Seq 2500, Applied Biosystems 3730xi DNA Analyzer, Applied Biosystems 3100 Genetic Analyzer, Parallax 350, Genetix QPix2XT, and Sequencer Software.

Proteomics and Biological Mass Spectrometry Facility

offers instrumentation to resolve complex proteomes and to identify and characterize the component proteins. Instrumentation assists in identifying proteins in the femtomole range, noncovalent protein interactions, and post-translational modifications, and determining differences in

MICROBIOLOGY AND MOLECULAR BIOLOGY

protein expression. The facility is equipped with an Applied Biosystem QSTAR Pulsar Hybrid QqToF Mass Spectrometer and 2D Gel technologies.

Cancer Research Center is an independent organization with members coming from the Colleges of Life Sciences, Engineering and Technology, Health and Human Performance, and Physical and Mathematical Sciences. A primary goal of the Cancer Research Center is to provide a rigorous research training program for students. Our ultimate goal is to find a cure through research and education.

Other Campus Facilities include a microscopy lab, greenhouses, gardens, arboretum, small-animal vivarium, and tissue culture rooms.

Faculty research interests currently include DNA replication, gene regulation, virology, immunology, cancer biology, pathogenesis, host-microbe interactions, molecular evolution, microbial ecology, and clinical lab science.

COURSE DESCRIPTION

MMBIO

510.History and Philosophy of Microbiology and Molecular Biology. (2)

Exploring the historical and philosophical context of great discoveries in microbiology and molecular biology through readings, group discussions, and analytical writing.

512.Gene Regulation. (2)

How cells respond to developmental, physiological, and environmental stimuli through molecular mechanisms that modulate DNA structure, DNA transcription, RNA translation, and macromolecular degradation. MMBIO 240

514.Advanced Immunology. (2)

Exploring current topics in immunology through critical reading of primary literature; presentations, group discussions, and analytical writing about specific areas within the discipline. MMBio 463 or equivalent.

516.Bacteria-Host Interactions. (2)

Bacterial and host functions that facilitate colonization in pathogenic and symbiotic systems. MMBIO 360; or MMBIO 364

518.Select Pathogens. (2)

Current literature in special pathogens. MMBio 221 or equivalent.

520.Molecular Virology. (2)

Molecular mechanisms of virus architecture, attachment and entry pathways, replication strategies, oncogenesis, evolution, and mechanisms of pathogenesis. MMBio 465 or equivalent.

522.Flow Cytometry. (2)

The theory and instrumentation of flow cytometry, including current applications and hands-on training.

528R.Current Topics in Pathogenesis. (1)

Readings from current literature on pathogenesis; student presentations and discussion. MMBio 151, 221, 261 or equivalent.

551R.Current Topics in Microbiology and Molecular Biology. (1-2)

Readings from current literature on a specific topic; student presentations and discussion.

661.Molecular Genetics in Practice. (3)

Fundamental concepts in molecular genetics and protein biochemistry with the following emphases: experimental approaches, model organisms, quantitative reasoning, and statistical analysis.

663.Articulating Science. (2)

Identifying open scientific questions and crafting written proposals describing context, impact, and detailed experimental research plans. Also, learning to critically evaluate the scientific writing of others. MMBIO 661

665.Genomics. (3)

Strategies and methods for genomic studies, emphasizing experimental design and computational and statistical approaches for analyzing data. MMBIO 661

691R.Graduate Seminar. (1)

692R.Research in Progress. (1)

Graduate student research presentations. Weekly meetings highlighting current progress and discussion-based feedback from faculty and student peers.

695R.Research. (0.5-18)

699R.Master's Thesis. (1-9)

799R.Doctoral Dissertation. (1-9)

FACULTY

Berges, Bradford *Assistant Professor*, PhD, University of Pennsylvania, 2005. Viral Infections of Humanized Mice

Breakwell, Donald P. *Teaching Professor*, PhD, Purdue University, 1992. Microbial Ecology

Bridgewater, Laura C. *Associate Professor*, PhD, George Washington University, 1995. Transcriptional Regulation; Developmental Biology

Davis, Mary *Assistant Professor*, PhD, Vanderbilt University, 2013. Human Genetics

Erickson, David *Associate Professor*, PhD, University of Calgary, Canada, 2003. Bacterial Pathogenesis

Evans, R. Paul *Assistant Professor*, PhD, Medical College of Virginia, 1983. Molecular Biology

Griffitts, Joel *Associate Professor*, PhD, University of California, San Diego, 2004. Plant-Bacterial Interactions

Grose, Julianne *Associate Professor*, PhD, University of Utah, 2003. Yeast Carbon Metabolism

Harker, Alan R. *Professor*, PhD, University of Utah, 1982. Microbial Physiology

Hope, Sandra *Associate Teaching Professor*, PhD, University of Kentucky, 2000. Veterinary Science; Molecular Immunology; Virology

Johnson, Steven *Associate Professor*, PhD, Yale University, 2004. Genetic Engineering, Nucleosome Positioning

McCleary, William R. *Associate Professor*, PhD, University of California, Berkeley, 1990. Microbial Physiology; Bacterial Signal Transduction

Nielsen, Brent L. *Professor*, PhD, Oregon State University, 1985. Plant Molecular Biology

O'Neill, Kim *Professor*, PhD, University of Ulster, Northern Ireland, 1986. Genetics; Oncology

Poole, Brian *Assistant Professor*, PhD, Pennsylvania State University, 2004. Cell-Virus Interactions

Robison, Richard A. *Professor*, PhD, Brigham Young University, 1988. Molecular Biology; Bacterial Pathogenesis; Immunology

Weber, K. Scott *Assistant Professor*, PhD, University of Illinois, 2005. Cell and Structural Biology

Wilson, Eric *Associate Professor*, PhD, Montana State University, 2000. Immunology

MUSIC

Department Chair: Saville, Kirt
Graduate Coordinator: Bigelow, Claudine

C-550 HFAC, Provo, UT 84602-6410
(801) 422-3149
<http://cfac.byu.edu/music/>

THE PROGRAMS OF STUDY

The graduate programs in the School of Music are designed to preserve and develop an art form that is essential to human progress and well-being and to provide advanced instruction in the art and craft of music.

The School of Music provides graduate education in composition, music education, musicology, and music performance, and it maintains accreditation for all of its degree programs through the National Association of Schools of Music.

Two degrees are offered through the School of Music: Music-MA, Music-MM. A music minor is also offered.

The School of Music has an average enrollment of seventy graduate students from various U.S. and international areas. The average time for a student to complete a master's degree in music is two years.

Music - MM

The master of music degree is offered with specializations in Composition, Conducting, Music Education, and Performance.

MM in Composition. The purpose of this specialization is to produce graduates who are prepared to make a significant contribution to the art form, either as composers or as teachers and scholars in composition and theory, and to provide aesthetic enrichment to both the composer and listener.

MM in Conducting. Students develop advanced, personal conducting skills and techniques that are precise and suited to a variety of musical needs; attain confidence, poise, and clarity with the baton; learn effective rehearsal techniques; and become familiar with a variety of instrumental and choral scores representing the repertoire of various music periods and sacred and secular styles. They learn to convey through gesture music's power and gentleness and its directness and subtlety to both the performer and audience and to select and bring to the community the great masterpieces of instrumental and choral literature.

MM in Music Education. This program is for those with an undergraduate degree in Music Education who wish to pursue further academic study as a means to develop professionally. The culminating project is the completion of a professional improvement project. Coursework combines the study of philosophical, research-based, and theoretical views of teaching and learning music with pragmatic approaches to improving music instruction as well as instruction on a primary/secondary instrument, conducting and/or teaching methodologies. Efforts are made to plan a program of study based on individual students' needs and interests while maintaining standards of musical and scholarly excellence. Available for full-time or summers-only study.

MM in Performance. The intent of the specialization is to prepare students with outstanding performance potential to be competitive in performance and teaching careers and to be advocates for the arts in their communities. They may help meet the needs for skilled performers of solo and small and large ensemble music, and they will be able to teach privately and help meet the considerable community demand for excellent private studio teachers.

MUSIC

Requirements for Specialization-Composition.

- Prerequisite: baccalaureate degree in music composition or equivalent in previous training.
- Credit hours (32): minimum 26 course work hours plus 5 master's composition hours (Music 687R).
- Required courses: Music 500, 503, 587R (5 hours), 650, 683, 687R (5 hours); 3 hours from 601, 602, 603, 604, 605, 606; 6 hours from 581, 583, 591, 596.
- Electives: 3 hours.
- Recital: strongly recommended.
- (Now required with Music 650) Composition.
- Examinations: (A) final oral examination; (B) defense of composition.

Requirements for Specialization-Conducting.

- Prerequisite: baccalaureate degree in music;
- Credit hours: minimum 32 course work hours including recital (Music 697A,B).
- Required courses: Music 500, 660R (conducting, 4 hours), ensemble (2 hours), 697A,B.
- *Band Emphasis*: Music 510, 532, 595, 606, and 5 hours of electives in addition to the 6 hours of electives listed below.
- *Choral Emphasis*: Music 506, 507, 533R (6 hours), and 4 hours of electives in addition to the 6 hours of electives listed below.
- *Orchestra Emphasis*: Music 508, 509, 532, 595, and 6 hours of electives in addition to the 6 hours of electives listed below.
- Electives: 6 hours in nonperformance music graduate courses (as approved by graduate committee) from one or more of the following areas: music education, music history, or music theory.
- Recital.

- Examinations: (A) jury examination each semester of enrollment in 660R; (B) repertory examination; (C) final oral examination.

Requirements for Specialization-Music Education.

- Prerequisite: public school music teacher certification; baccalaureate degree in music.
- Credit hours: minimum 32 course work hours including a professional improvement project (Music 698A,B).
- Required courses: Music 501, 560R (4 hours), 673, 674, 675; 698A,B.
- *Choral Emphasis*: Music 533R (6 hours), and 10 hours of electives.
- *Instrumental Emphasis*: Music 595; 6 hours from 508, 509, 510, 532R, 534R, 535R; and 8 hours of electives.
- Professional Improvement Project.
- Examinations: (A) comprehensive written examination; (B) final oral examination and defense of project.

Requirements for Specialization-Performance.

- Prerequisite: baccalaureate degree in performance or equivalent; proficiency in German, French, and Italian diction for voice candidates.
- Credit hours: minimum 32 course work hours including recital (Music 697A,B).
- Required courses:
- *Voice Emphasis*: Music 500, 505A,B, ensemble (2 hours), 660R (6 hours), 665, 670R (2 hours), 697A,B, and 4 hours of electives in addition to the 6 hours of electives listed below.

- *Orchestral Instrument Emphasis*: Music 500, 505A,B, large ensemble (2 hours), chamber ensemble (2 hours), 660R (6 hours), 665, 670R (2 hours), 697A,B, and 2 hours of electives in addition to the 6 hours of electives listed below. Scholarship students may have additional ensemble requirements; see your graduate adviser for details.
- *Keyboard Instrument Emphasis*: Music 500, 505A,B, ensemble (2 hours), 591, 660R (6 hours), 665, 670R (2 hours), 697A,B, and 2 hours of electives in addition to the 6 hours of electives listed below. The ensemble requirement listed above includes 644R.
- Electives: 6 hours in nonperformance music graduate courses (as approved by graduate committee) from one or more of the following areas: music education, music history, or music theory.
- Recital.
- Examinations: (A) jury examination each semester of enrollment in 660R; (B) repertory examination; (C) final oral examination.

FINANCIAL ASSISTANCE

The School of Music offers four types of graduate awards: assistantships, internships, performance awards, and scholarships.

RESOURCES AND OPPORTUNITIES

The Harris Fine Arts Center, which houses the School of Music, contains two concert halls and numerous practice rooms for music, dance, and theatre.

Graduate students have opportunities to perform individually and with groups in both the Madsen Recital Hall and the de Jong Concert Hall in the Harris Fine Arts Center.

For a more detailed description of the graduate program requirements, see the online School of Music Graduate Handbook on the School of Music's website.

COURSE DESCRIPTION

MUSIC

500.Musical Research Techniques. (2)

Graduate status.

501.Music Education Research Techniques. (2)

Graduate status.

503.Aesthetics. (3)

Fundamental questions of aesthetic theory from classical antiquity to the present, emphasizing musical aesthetics.
Music 306 or equivalent.

505A.Applied Literature. (2)

Advanced survey and research of literature.
Minimum of one enrollment in Music 402-407 or equivalent.

505B.Advanced Applied Literature. (2)

Intensification and deeper study of Music 505A materials.
MUSIC 505A

506.Choral Literature 1. (2)

Concentrated analytical study and application of choral literature through Beethoven.
Instructor's consent.

507.Choral Literature 2. (2)

Concentrated analytical study and application of choral literature from post-Beethoven to the present.
Instructor's consent.

508.Orchestra Literature 1. (2)

Concentrated analytical study and application of orchestral literature of the baroque and classical eras.
Instructor's consent.

509.Orchestra Literature 2. (2)

Concentrated analytical study and application of orchestral literature of the romantic era and the 20th century.
Instructor's consent.

510.Band Literature. (2)

Concentrated study of band literature through analysis and conducting.
Instructor's consent.

511.Oratorio Literature for Solo Voice. (2)

History, repertoire, and performance practice of sacred works with a focus on works from the Baroque Era to Contemporary.
Music 402A or equivalent.

532R.Score Preparation and Conducting: Instrumental. (2)

Instructor's consent.

533R.Choral Conducting and Development. (2)

Principles and practices of score preparation, conducting, and choral development as elements of choral artistry.

534R.Score Preparation and Direction: Jazz. (2)

535R.Instrumental Conducting and Error Detection. (2)

Development of critical rehearsal and conducting skills through score preparation, lesson planning, rehearsal goals and predicting issues, performance accuracy, score transpositions, error detection, conducting gesture analysis, and music-mapping for the development of expressive conducting gesture.

560R.Performance Instruction. (1-2)

Performance instruction for students not specializing in performance, and for performance students wishing to study secondary instruments.
Graduate music student status.

575R.Summer Music Workshops and Clinics. (0.5-4)

576.Fundamentals and Techniques of the Marching Band. (2)

Planning, charting, and scoring for marching bands.
Music 294, 296 (or equivalents);
music education major status.

581.Twentieth-Century Orchestration. (3)

New techniques for standard and new instruments; analysis and listening.
Music 481 or equivalent.

583.Sixteenth-Century Counterpoint. (3)

Strict modal counterpoint in sixteenth-century style (Palestrina); includes species, text setting, and motet.
C- or higher in Music 294, 296, or equivalent.

587R.Composition. (3)

591.Advanced Topics in Keyboard Harmony. (2)

Topics vary.
Instructor's consent.

595.Score Analysis. (2)

Analysis of representative choral and instrumental works from the Renaissance through contemporary styles.

596.Schenker Analysis. (3)

Schenker's system of tonal analysis.
Music 306, 395; or equivalents.

599R.Academic Internship. (1-6)

Internship in creative, performing, producing, or teaching applications of major course work.
Instructor's consent.

600R.Topics in Music. (1-3)

Music 305, 306; or equivalents.

601.Music in the Middle Ages. (3)

Music 305, 306; or equivalents.

602.Music in the Renaissance. (3)

Music 305, 306; or equivalents.

603.Music in the Baroque Era. (3)

Music 305, 306; or equivalents.

MUSIC

604.Music in the Classic Period. (3)
Music 305, 306; or equivalents.

605.Music in the Romantic Period. (3)
Music 305, 306; or equivalents.

606.Music of the Contemporary Period. (3)
Music 305, 306; or equivalents.

612R.Men's Chorus. (1)
Ensemble of male voices that performs a variety of styles and repertoire, ranging from the established literature to popular idioms of the 20th century. Audition required.
Audition and director's consent.

613R.Women's Chorus. (1)
Draws on works from the vast repertoire for treble voices. Audition required.
Audition and director's consent.

614R.Concert Choir. (1)

615R.University Singers. (1)

616R.Opera Workshop. (1)
Training and experience in operatic choral music and stage movement.
Audition; instructor's consent.

617R.Opera Ensemble. (1-3)
Training and experience in operatic excerpts, chamber opera, and full productions for operatic soloists.
Audition; instructor's consent.

625R.Symphonic Band. (1)
Performs standard band literature.
Audition required.
Audition.

626R.Wind Symphony. (1)

630R.Steel Band. (1)
Performing Pan music in the Calypso and Soco styles from Trinidad.
Director's consent.

631R.Jazz Combo. (1)
Formed each semester and includes a rhythm section and two or three wind players. These intimate groups provide intensive experience in improvisation and perform frequently. Also participate in the combo master class. Audition required.
Audition.

633R.Jazz Ensemble. (1)
High-caliber musical experience with jazz, rock, Latin, and fusion styles and provides opportunities for growth in improvisation. Audition required.
Audition.

634R.Synthesis. (1)

635R.Jazz Legacy Band. (1)
Traditional ensemble specializing in early jazz. Band occasionally tours off campus.
Audition.

636R.Balinese Gamelan. (1)
Playing and performing on the Balinese gamelan (percussion) instruments.

637R.Symphony Orchestra. (1)
Performs challenging literature from the standard orchestral repertoire. Collaborative concerts include the annual underclassmen concerto night and the biennial musical. 85-member ensemble performs approximately two times a semester. Audition required.
Audition.

638R.Philharmonic Orchestra. (1)

639R.Chamber Orchestra. (1)

641R.Brass Chamber Music. (1)

644R.Keyboard Ensemble. (1)

645R.Percussion Ensemble. (1)

646R.String Chamber Music. (1)

648R.Woodwind Chamber Music. (1)

649.Solo Recital. (2)
Concurrent enrollment in Music 660R.

650.Graduate Composition Recital. (1)
Required recital for MM in Composition.
MM in Composition student.

660R.Graduate Instrument Instruction. (1-2)
For performance specialization.
Fee.
Completion of undergraduate performance proficiency requirements and audition; primary instrument only.

665.Pedagogy. (2)
Advanced pedagogical studies.
Completion of appropriate undergraduate pedagogy courses or equivalent.

670.Supervised Teaching. (2)
Supervised private and group instruction.
Graduate music major status.

672.Psychology of Music. (2)
Psychoacoustical properties of musical phenomena and the neurological aspects of music perception and performance.

673.Historical and Social Foundations of Music Education. (2)
Leaders, events, and trends in history of music education, emphasizing sociological implications.

674.Philosophical and Aesthetic Foundations of Music Education. (2)
Questions related to teaching music in the public schools.

675.Theories of Music Learning and Motivation. (2)
Applications of psychology to teaching and learning music.
Research paper required.

676.Teaching Secondary General Music. (2)

Theories, methods, and practical applications for providing rich musical experiences for secondary students in non-performance music courses; including musical mapping and effective teaching techniques.

683.Twentieth-Century Counterpoint. (3)

Counterpoint from the works of Schoenberg, Stravinsky, Crumb, Lutoslawski, and others.
MUSIC 583

687R.Composition for Master's Degree (1-6)

Graduate music faculty's consent, based on evidence of ability in composition manifested in preliminary work.

694R.Independent Readings. (1-3)
Graduate coordinator's consent.**697A.Researching the Recital. (2)**

Preparation of a paper related to music of graduate recital. Alternate topic possible with graduate committee's consent. Supervised by the student's committee chair or other appropriate faculty member.

697B.Recital. (2)**698A.Introduction to Professional Improvement Project. (2)**

Identifying and delineating a project. Study list constructed and advisor assigned.

698B.Master's Project - Professional Improvement Project. (2)

Presentation of project and written report.

699R.Master's Thesis. (1-9)

Department graduate faculty's consent.

FACULTY

Anderson, Richard P. *Professor, DMA, University of Colorado, 1986. Piano Pedagogy*

Asplund, Christian T. *Associate Professor, DMA, University of Washington, 1998. Theory and Composition*

Babidge, Darrell *Associate Professor, Professional Degree, Manhattan School of Music, 2001. Vocal Performance*

Belknap, Monte *Associate Professor, MM, University of Cincinnati, 1994. Violin Performance*

Bigelow, A. Claudine *Associate Professor, DMA, University of Maryland, 2002. String Performance and Pedagogy*

Brandt, Robert D. *Assistant Professor*

Broomhead, Paul *Professor, PhD, University of Washington, 1999. Music Education*

Brough, Ronald P. *Professor, DA, University of Northern Colorado, 1997. Percussion Performance and Pedagogy*

Brown, David C. *Associate Professor, MM, University of Toledo, 1997. Trumpet Performance and Pedagogy*

Call, R. Steven *Professor, PhD, University of Utah, 2000. Tuba/Euphonium Performance and Pedagogy*

Clayton, April *Professor, DMA, The Juilliard School of Music, 2001. Flute Performance*

Cook, R. Donald *Associate Professor, DMA, University of Kansas, 1987. Organ Performance and Pedagogy*

Crane, R. Andrew *Assistant Professor, DMA, Michigan State University, 2005. Choral Conducting*

Dabczynski, Andrew H. *Professor*

Dunn, Robert E. *Professor, PhD, Northwestern University, 1994. Music Education*

Fox, Irene W. *Professor, DMA, Peabody Conservatory of Johns Hopkins University, 1987. Piano Performance and Pedagogy*

Giovannetti, GERALYN *Professor, DMA, University of Michigan, 1990. Oboe and Woodwind Performance and Pedagogy*

Grimshaw, Jeremy *Associate Professor, PhD, Eastman School of Music, 2005. Musicology*

Hall, Rosalind *Associate Professor, MM, Brigham Young University, 1992. Choral Conducting*

Hansen, H. Eric *Associate Professor, MM, Peabody Conservatory of Johns Hopkins University, 1989. Performance*

Harker, Brian C. *Professor, PhD, Columbia University, 1997. Musicology*

Hicks, Michael D. *Professor, DMA, University of Illinois, 1984. Theory and Composition*

Hinckley, Jaren S. *Associate Professor, DM, Florida State University, 2002. Clarinet Performance*

Holden, Scott L. *Associate Professor, DMA, Manhattan School of Music, 2002. Piano Performance and Pedagogy*

Howard, Luke *Associate Professor, PhD, University of Michigan, 1997. Musicology*

Johnson, Steven P. *Professor, PhD, University of California, Los Angeles, 1989. Musicology*

Jones, Stephen M. *Professor, DMA, University of Cincinnati, 1989. Theory and Composition*

Katseanes, Kory *Professor, MM, University of Utah, 1979. Orchestral Conducting*

Kesler, Michelle *Assistant Professor, DMA, Arizona State University, 2014. Cello Performance*

Kimball, Wilford W. (Will) *Associate Professor, DMA, Arizona State University, 2001. Trombone and Brass Performance and Pedagogy*

NEUROSCIENCE (PROGRAM)

Lindeman, Stephan D. *Professor,*
PhD, Rutgers University, 1995.
Music Theory

Lowe, Laurence M. *Professor, MM,*
University of Rochester, 1981.
Horn and Brass Performance and
Pedagogy

May, Brittany *Assistant Professor,*
PhD, University of Utah, 2015.
Music Education

Peterson, Donald L. *Associate
Professor, DMA, Arizona State
University, 1986. Instrumental
Conducting*

Reich, Diane T. *Associate Professor,*
DM, Indiana University, 2003.
Vocal Performance and Pedagogy

Ricks, Steven L. *Associate Professor,*
PhD, University of Utah, 2001.
Theory and Composition

Saville, Kirt R. *Professor, EdD, Utah
State University, 1991. Music
Education*

Shumway, Jeffrey L. *Professor*

Smith, Christian B. *Professor, DMA,*
University of Michigan, 2006.
Bassoon Performance Instruction

Smith, Raymond *Professor, DM,*
Indiana University, 1982.
Saxophone and Woodwind
Performance and Pedagogy

Thornock, Neil S. *Associate Professor,*
DM, Indiana University, 2006.
Theory and Composition

Vincent, Lawrence P. *Professor,*
DMA, University of Michigan,
1981. Vocal Performance and
Pedagogy

Woods, Alexander *Assistant Professor,*
MM, Yale University, 2008. Violin
Performance

Yorgason, Brent *Associate Professor,*
PhD, Indiana University, 2009.
Music Theory

NEUROSCIENCE (PROGRAM)

Graduate Coordinator: Reynolds,
Paul R.

Program Manager: Provost,
Connie L.

4005 LSB, Provo, UT 84602-5245
(801) 422-3706
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<http://pdbio.byu.edu>

THE PROGRAMS OF STUDY

*For degree programs related to
neuroscience, see the Department of
Physiology and Developmental Biology.*

Neuroscience is an interdisciplinary degree program involving multiple academic colleges and departments (Physiology and Developmental Biology, Psychology, Chemistry and Biochemistry, Communication Disorders, and Mechanical Engineering). Neuroscience is defined as the study of the development and function of the central nervous system and its connection to influencing/regulating behavior. The study of Neuroscience at the graduate level requires the tools provided by training in calculus, general biology, genetics, physiology, molecular biology, chemistry, physics, psychology, research design, and analysis of molecular mechanisms to biochemical pathways that influence behavior.

The Neuroscience degree requirements and course descriptions for the MS and PhD programs are listed under the Physiology and Developmental Biology Department page on the Graduate Studies web catalog.

FINANCIAL ASSISTANCE

The Department of Physiology and Developmental Biology offers the following financial aid: teaching assistantships, research assistantships, and tuition awards. Specific endowment fund awards are also available.

RESOURCES AND OPPORTUNITIES

Program resources include the laboratories and equipment of department faculty within the Life Science Building and the Eyring Science Center. An electron microscope laboratory, with both transmission and scanning microscopes, is also located on campus. A DNA sequencing center is available in the Life Sciences Building.

COURSE DESCRIPTION

NEURO

601. Graduate Neuroscience. (3)

Student presentation of current primary literature.
Neuro 380, 480, 481; or equivalents.

649R. Laboratory Research. (1-6)

Laboratory research for neuroscience graduate students. Instructor's consent.

689R. Practicum in Neuroscience Teaching or Research. (0.5-3)

Curricula, principles, concepts, and experiences in effective neuroscience teaching or methods of effective research and grantsmanship in neuroscience.

694R. Research Presentation. (0.5-1)

Oral presentation of graduate research projects (introduction, methods, hypothesis, results, and conclusion).

696R. Neuroscience Graduate Seminar. (0.5-1)

Seminar series organized by the Neuroscience Center and the Department of Physiology and Developmental Biology. Speakers are enlisted from both inside and outside the university.

699R. Master's Thesis. (1-6)

799R. Doctoral Dissertation. (1-18)

FACULTY

Bangerter, Neal K. (Electrical and Computer Engineering)
Associate Professor, PhD, Stanford University, 2004. Magnetic Resonance Imaging

Bigler, Erin D. (Psychology)
Professor, PhD, Brigham Young University, 1974. Neuropsychology; Neuroanatomy; Neuroimaging

Brown, Michael D. Associate Teaching Professor, PhD, Colorado State University, 1999. Regulation of Axon and Dendrite Extension; Pathfinding During Nervous System Development

Busath, David D. (Physiology and Developmental Biology)
Professor, MD, University of Utah, 1978. Electrophysiology; Molecular Modeling; Molecular Biophysics

Charles, Steven K. (Mechanical Engineering) *Assistant Professor, PhD, Harvard-MIT Division of Health Sciences and Techno, 2008. Control of Movement; Movement Disorders*

Edwards, Jeffrey E. (Physiology and Developmental Biology) *Assistant Professor, PhD, University of Utah, 2003. Learning and Memory; Synaptic Plasticity*

Flom, Ross A. (Psychology) *Associate Professor, PhD, University of Minnesota, 1999. Attention and Cognition in Infants*

Gale, Shawn D. (Psychology)
Associate Professor, PhD, Brigham Young University, 1994. Neuropsychology, Epilepsy, Traumatic Brain Injury and Memory

Hedges, Dawson W. (Psychology)
Professor, MD, University of Utah, 1988. Psychiatry; Neuroscience; Neuroimaging and Neuroendocrinology

Higley, Dee (Psychology)
Professor, PhD, University of Wisconsin, Madison, 1985. Child Development; Primate Behavior

Hopkins, Ramona O. (Psychology)
Professor, PhD, University of Utah, 1996. Cognitive Neuroscience and Neurobiological Approaches to Cognition; Brain Imaging; Brain Behavior Relationships; Emotion; Health-Related Quality of Life; Cognitive Development; Family Stress Due to Illness

Judd, Allan M. (Physiology and Developmental Biology)
Professor, PhD, West Virginia University, 1982. Physiology; Neuroendocrinology

Kauwe, John S. K. (Biology)
Assistant Professor, PhD, Washington University in St. Louis, 2007. Genetic Architecture of Complex Human Diseases

Kirwan, Brock (Psychology)
Assistant Professor, PhD, Johns Hopkins University, 2006. Cognitive Neuroscience of Memory

Larson, Michael J. (Psychology)
Assistant Professor, PhD, University of Florida, 2008. Mechanisms of Cognitive Dysfunction Following Traumatic Brain Injury

Lephart, Edwin D. (Physiology and Developmental Biology)
Professor, PhD, University of Texas Southwestern Medical Center, 1989. Neuroendocrinology

McPherson, David (Communication Disorders) *Professor, PhD, University of Washington, 1972. Audiology; Hearing Science; Electrophysiology*

Porter, Chris L. (Family Life)
Associate Professor, PhD, Purdue University West-Lafayette, 1996. Infancy; Toddlerhood

Porter, James P. (Physiology and Developmental Biology)
Professor, PhD, University of California, San Francisco, 1982. Neuroendocrinology; Hypertension

South, Mickle D. (Psychology)
Assistant Professor, PhD, University of Utah, 2005. Autism Spectrum Disorder, Child Clinical Psychology

Stark, Michael R. (Physiology and Developmental Biology) *Associate Professor, PhD, University of California, Irvine, 1998. Developmental Biology*

Steffensen, Scott C. (Psychology)
Associate Professor, PhD, University of Utah, 1987. Neurobiology of Addiction

Sudweeks, Sterling N. (Physiology and Developmental Biology)
Associate Professor, PhD, University of Utah, 1997. Pharmacology of the Nervous System; Ion Channels

Wisco, Jonathan J. (Physiology and Developmental Biology)
Associate Professor, PhD, Boston University School of Medicine, 2003. Translational Anatomy of Degenerative Diseases

Woodbury, Dixon J. (Physiology and Developmental Biology)
Professor, PhD, University of California, Irvine, 1986. Molecular Mechanisms of Exocytosis; Neuroscience of Transmitter Release

NURSING

Dean: Ravert, Patty *Graduate Coordinator:* Williams, Mary

500 SWKT, Provo, UT 84602-5532
(801) 422-5626
nursing_graduate@byu.edu
<http://nursing.byu.edu>

THE PROGRAMS OF STUDY

The graduate program, administered by the College of Nursing, prepares advanced practice nurses to: (1) Integrates scientific findings from nursing, biopsychosocial fields, genetics, public health, quality improvement, and organizational sciences for continual improvement of patient care across diverse settings; (2) Utilizes organizational and systems leadership to promote high quality and safe patient care; (3) Applies methods, tools, performance measures, and standards related to quality improvement and safety within organizations; (4) Participates as a change agent in translating and integrating scholarship and evidence into practice settings to optimize quality patient outcomes; (5) Utilizes patient-center and communication technologies to integrate, coordinate, deliver and enhance health care; (6) Intervenes at the system level through the policy development process and employing advocacy strategies to influence health and health care; (7) Participates, consults, communicates and collaborates as a member and leader of interprofessional teams to manage and coordinate care; (8) Applies and integrates broad organizational, client-centered, culturally appropriate concepts in planning, delivery, managing, and evaluating evidence-based clinical prevention and population care and services to individuals, families and aggregates/identified populations; (9) Provides competent evidence based advanced-practice nursing care as a family nurse practitioner to diverse individuals, families, and groups and manages health and illness across the continuum of care and across the lifespan; and (10) Provides care in a

compassionate manner that respects, protects, and enhances spiritual integrity, human dignity, cultural diversity, and demonstrates the Healer's art.

The College of Nursing is a member of the Council of Baccalaureate and Higher Degree Programs of the National League for Nursing, the American Association of Colleges of Nursing, and the Western Council on Higher Education in Nursing. The program is accredited by the Commission on Collegiate Nursing Education (CCNE) and is also approved by the Utah State Board of Nursing.

The College of Nursing offers one degree in nursing, the Master of Science Family Nurse Practitioner degree.

Approximately thirty students are enrolled in the College of Nursing's graduate program. The program can be completed in approximately two to three years, although five years are allowed.

Nursing - MS

The master of science degree program emphasizes clinical expertise and includes nursing theories and concepts as well as extensive clinical experience. Practice based on the best evidence is an important component of the program, and students are required to write a thesis, develop an innovative clinical project, or complete a scholarly evidence-based paper of a relevant clinical problem.

Requirements for Degree

Credit hours:

59-62 (depending on culminating writing experience selection): minimum 53-56 course work hours plus 6 thesis (Nurs 699R) or project (Nurs 698R) hours; or a scholarly evidence-based paper (Nurs 623, 631).

Required courses:

- Nurs 555, 600, 601, 603, 605, 606, 607, 608, 609, 619, 621, 622, 624, 625, 626, 628, 630, 632, 635R; 698R or 699R; or 623, 631.
- Electives: determined in consultation with graduate committee.
- Thesis/Project or a scholarly evidence-based paper.
- Examination: oral defense of thesis or project.

FINANCIAL ASSISTANCE

The College of Nursing actively seeks financial resources to assist students. Governmental funds are available, and RNs can usually find local part-time work. The university also has limited funds available. Students who need financial aid should contact the College of Nursing graduate coordinator. Also you can contact the University Financial Aids Office for financing options. College of Nursing research and teaching assistantships are also available.

Assistantships. Students must be registered and able to meet the skill and credit-hour requirements for the available teaching and research assistantships. For more information, students should meet with the college graduate coordinator.

Scholarships. Scholarships, awarded on the basis of GPA and need, are available to degree-seeking master's students. Recipients must take at least 2 credit hours per semester to maintain the scholarship. They must also maintain at least a 3.0 GPA. See the college graduate coordinator or the graduate secretary for more information.

RESOURCES AND OPPORTUNITIES

Research Center. The college research center, available to faculty and graduate students, is equipped with computer stations and software supporting statistical quantitative data analyses and qualitative

data management. The center has graphics capability and assists in the preparation of research reports, articles, and presentations.

Facilities. A graduate study room is available on the fourth floor of the Spencer W. Kimball Tower. The study room is equipped with computers and a printer. Four fully equipped physical assessment stations are found in the Nursing Learning Center. Clinical agencies in urban and rural Utah are settings for advanced practice nursing. Many of these institutions maintain continual clinical research programs and innovative management strategies appropriate for graduate students. Nurse practitioner clinics and rural practitioner sites also offer a challenging experience in becoming an independent practitioner.

COURSE DESCRIPTION

NURS

555.Pharmacology in Advanced Practice. (2)

Principles of pharmacology and drug therapy for advanced practice nurses.

590R.Independent Study. (0.5-4)

Individualized study.
Instructor's consent.

600.Nursing Science 1: Evidence Based Practice. (2)

Developing skills and knowledge in selecting and synthesizing the best research evidence to provide quality health care.
Concurrent enrollment in Nurs 627.

601.Nursing Science 2: Translating and Integrating Scholarship and Evidence into Practice. (2)

Developing skills and knowledge in systematically appraising and translating the best research and evidence to provide quality health care.
NURS 600

603.Applied Pharmacology in Advanced Practice. (1)

Experience in prescribing and managing drug therapy in patients with a variety of conditions and across the life span.
NURS 555

605.Organizational and Systems Leadership. (2)

Utilize principles of organizational and systems leadership to promote high quality and safe patient care.

606.Advanced Practice Nursing Theories, Roles, Issues, Ethics, and Interprofessional Collaboration. (3)

Professional theories, roles, issues, ethics, and the use of interprofessional collaboration for advanced-practice nurses.

607.Informatics and Health Care Technologies. (2)

Use of patient care and other technologies to deliver, integrate, coordinate, and improve outcomes of care.

608.Health Care Policy and Finance. (2)

Knowledge and skills influencing health care policy; utilizing fiscal accountability to provide quality cost-effective care.

609.Quality Improvement and Safety. (2)

Utilize methods, tools, performance measures, culture of safety principles, and standards to ensure quality improvement and safety of patient care.

619.Advanced Pathophysiology and Genetics/Genomics. (3)

The effects of genetics/genomics, cellular physiology, inflammatory and immune response on disease states.

621.Advanced Health Assessment Across the Life Span. (3)

Development of physical assessment techniques across the life span.

622.Diagnosis and Management of Adult Common Disorders. (5)

Health promotion and disease prevention; diagnosing and managing common psychosocial and physiological alterations in adult patients.
NURS 619 & NURS 621; Concurrent with 624.

623.Evidence-Based Writing 1: Selecting and Synthesizing. (2)

Mentored experience in selecting and synthesizing evidence.
NURS 600 & NURS 601

624.Clinical Practicum 1. (3)

Clinical experience in health promotion and disease prevention; diagnosing and managing adults with common psychosocial and physiological alterations and pediatric and adolescent patients.
NURS 625; Concurrent with 622.

625.Diagnosis and Management of Pediatric and Adolescent Disorders and Family Health. (3)

Health promotion and disease prevention; diagnosing and managing psychosocial and physiological alterations in pediatric and adolescent patients and family health.

626.Clinical Practicum 2. (2)

Clinical experience in health promotion and disease prevention; diagnosing and managing adults with chronic psychosocial and physiological alterations and geriatric patients.
NURS 622 & NURS 624 & NURS 625

628.Clinical Practicum 3. (2)

Clinical experience in health promotion and disease prevention; diagnosing and managing patients with acute psychosocial and physiological alterations.
Nurs 555, 600, 601, 606, 619, 621, 622, 623, 624, 625, 626, 629, 630; concurrent enrollment in Nurs 608, 632.

NUTRITION, DIETETICS, AND FOOD SCIENCE

629.Advanced Pathophysiology and Diagnostic Reasoning. (2)

Pathology underlying complex disease states; physiologic basis for therapy and management. Nurs 555, 600, 601, 606, 619, 621, 622, 623, 624, 625; concurrent enrollment in Nurs 626, 630, 631.

630.Diagnosis and Management of Chronic Adult and Geriatric Disorders. (5)

Health promotion and disease prevention; diagnosing and managing chronic psychosocial and physiological alterations in adult and geriatric patients. NURS 622 & NURS 624 & NURS 625

631.Evidence-Based Writing 2: Critically Appraising and Disseminating Evidence-Based Findings. (1)

Mentored experience in critically appraising and disseminating evidence-based findings. NURS 623

632.Diagnosis and Management of Acute Disorders Across the Life Span. (4)

Health promotion and disease prevention; diagnosing and managing acute psychosocial and physiological alterations across the life span. NURS 626 & NURS 630

635R.Family Nurse Practitioner Internship. (1-8)

Internship as a family nurse practitioner.

698R.Project. (0.5-6)

Master's project. Committee's consent.

699R.Master's Thesis. (0.5-6)

Committee's consent.

FACULTY

Beckstrand, Renea *Professor*, PhD, University of Utah, 2001. Comprehensive Care of the Adult Client with Acute Health Problems

Freeborn, Donna *Assistant Professor*, PhD, Oregon Health and Science University, 2008. Women with Disabilities

Heise, Barbara *Associate Professor*, PhD, University of Virginia, 2006. Adult and Gerontological Mental Health; Alcohol and Drug Abuse

Himes, Deborah *Assistant Professor*

Lassetter, Jane *Associate Professor*, PhD, Oregon Health and Science University, 2008. Culture and Health

Luthy, Beth *Assistant Professor, DNP*, Rush University, 2008. Childhood Immunizations

Macintosh, Janelle B. *Assistant Professor*, PhD, University of Utah, 2010. Maternal Identity in Vulnerable Populations

Merrill, Katreena C. *Assistant Professor*, PhD, University of Utah, 2011. Quality, Patient Safety and Nursing Leadership in Acute Care Settings

Ravert, Patty *Professor*, PhD, University of Utah, 2004. Educational Interventions; Use of Human Simulations

Rogers, Sandra *Associate Professor*, PhD, University of California, San Francisco, 1989. Primary Health Care; International Health

Williams, Mary *Associate Professor*, PhD, University of Arizona, 1991. Family Response to Heart Transplantation; Qualitative Methodologies; Instrument Development

NUTRITION, DIETETICS, AND FOOD SCIENCE

Chair: Dunn, Michael L.
Graduate Coordinator: Fullmer, Susan

S-227 ESC, Provo, UT 84602-4062
(801) 422-3349
susan_fullmer@byu.edu
<http://ndfs.byu.edu/>

THE PROGRAMS OF STUDY

Food Science is the multidisciplinary study of food, utilizing biology, chemistry, nutrition, engineering, and other sciences.

Nutritional Science examines the effects of food consumption on the metabolism, health, and disease resistance in humans. Dietetics is the application of food and nutrition principles in healthcare and food service settings. Programs in both disciplines offer rigorous classroom instruction combined with challenging, original research. Small faculty-to-student ratios permit intense, meaningful mentoring by faculty advisors.

The Department of Nutrition, Dietetics, and Food Science offers two graduate degrees: an MS in Food Science and an MS in Nutritional Science and Dietetics (two tracks: Nutrition Science and Dietetics). Usual completion time is two years.

Nutritional Science and Dietetics - MS

The MS program in Nutritional Science and Dietetics offers two tracks. The nutritional science track is designed to prepare graduate students for doctoral programs and professional school (medicine, podiatry, physician's assistant, dental). Graduates are also employed in government, industry, community, and not for profit organizations. Graduates who are registered dietitians are prepared to work in hospitals, dietetics management, or community nutrition.

The dietetics track is designed to meet the supervised practice and course requirements to qualify graduates to take the Registration Examinations for Dietitian and Nutritionists (RDN exam). Upon graduation and completion of the RDN exam graduates work in multiple areas including hospitals, wellness, large food service operations, business and industry, community health programs, management, and entrepreneurial or private practice.

Research opportunities include focus on vitamin or mineral metabolism, muscle energy metabolism, bone metabolism, energy metabolism, nutrition education, medical nutrition therapy, management in dietetics, and international or community nutrition.

Requirements for Nutrition Science MS Specialization.

- Credit hours (30): minimum 24 course work hours plus 6 thesis hours (NDFS 699R)
- Prerequisites: NDFS 424, 435; Chem 481
- Required courses: NDFS 601, 602, 691R, 699R; Stat 511
- Minor (optional): selected with approval of faculty advisor
- Examinations: oral examination on course work; and thesis defense
- Thesis: standard university format or journal publication format.

Requirements for the Dietetics MS Specialization:

- 33 credit hours (27 credits course work, plus 6 credits project hours)
- Required Core Courses: NDFS 620R, 621, 622, 637, 638, 691, STATS 511 (17 credits)
- Additional requirements: Minimum of 6 credits from the following NDFS 425, 601, 602, 633, 634, 635
- Elective Courses: Minimum of 4 credits from NDFS courses or other related courses

- 1,200 hours supervised practice
- Project: project proposal, implementation of project, final project report 698R (6 credits)

FINANCIAL ASSISTANCE

Graduate students may be supported as department teaching assistants or research assistants. Students may also be supported by external research funds (grants, contracts) awarded to their advisors. Graduate students are encouraged to apply for scholarships, grants, fellowships, assistantships, and other awards made by the department, college, and university and by external funding agencies.

RESOURCES AND OPPORTUNITIES

Pilot Plant. The Pilot Plant is used to conduct research dealing with food products, using pilot-scale equipment.

Sensory Laboratory. The sensory laboratory is a modern taste panel facility used to train students in sensory testing. Panelists register impressions of samples on computerized questionnaires in an isolated booth equipped with aroma and lighting control. Computerized analysis rapidly transforms data into easily interpreted results.

Quality Assurance Laboratory. The quality assurance laboratory performs quality assurance tests for The Church of Jesus Christ of Latter-day Saints Welfare Services. This research grant provides on-the-job-training, practical experience, and the opportunity to receive compensation for the time spent in learning.

Nutrition Assessment Laboratory. The nutrition assessment lab houses a dual energy x-ray absorption scanner (DXA) to measure body composition and bone density, an indirect calorimeter to measure resting metabolic rate, infant and adult anthropometric equipment, several pieces of equipment to perform basic biochemical assays

(glucose, hemoglobin, lipid profile, urine analysis), and computer carousels for qualitative research.

Dietetic Internship. The Brigham Young University Dietetic Internship is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) of The Academy of Nutrition and Dietetics, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-4876. The ten-month dietetic internship (DI) meets the competencies and learning outcomes requirements established by ACEND for entry-level dietitians.

See the department Web site for graduate faculty research interests and ongoing research projects.

Opportunities. Depending on the research project, a student might learn to do some of the following methods and instrumentation: chromatography (HPLD, GC-MS, headspace analysis), nitrogen analysis, mitochondria respiration assays, animal husbandry, pancreatic islet isolation, live cell imaging, histology, immunofluorescence, molecular biology techniques (proteomics, genomics, bioinformatics, data mining, metabolic studies, real-time PCR, and Western blots), DXA, indirect calorimetry, nutritional assessment and qualitative research methods.

COURSE DESCRIPTION

NDFS

601.Advanced Human Nutrition 1. (3)

Nutritional status and scientific basis for dietary recommendations for carbohydrates, lipids, protein, and energy.
NDFS 435

602.Advanced Human Nutrition 2. (3)

Nutritional status and scientific basis for dietary recommendations for vitamins, minerals, and water.
NDFS 435

NUTRITION, DIETETICS, AND FOOD SCIENCE

620R.Supervised Practice Experience. (1-4)

Supervised practice experience in clinical, management, and community dietetics settings. Acceptance into dietetic internship.

621.Clinical Practice in Dietetics. (2)

Supervised practice in clinical dietetics. Acceptance into dietetic internship.

622.Food Systems Management Practice in Dietetics. (2)

Supervised practice in food service systems management. Acceptance into dietetic internship.

631R.International Nutrition. (0.5-3)
NDFS 601, 602; or instructor's consent.

631R.Selected Topics in Food Science and Nutrition. (1-2)
NDFS 601, 602; or instructor's consent.

631R.Protein. (0.5-3)
NDFS 601, 602; or instructor's consent.

631R.Diabetes. (0.5-3)
NDFS 601, 602; or instructor's consent.

632.Diet and Cancer. (2)
Critical examination of scientific evidence regarding the role of dietary macronutrients, vitamins, minerals, and phytochemicals in the initiation, promotion, and progression of cancer.
NDFS 601 & NDFS 602

633.Maternal/Child Nutrition and Health. (2)

Critical examination of current nutrition-related research, legislation, and policy guidelines for the life stages of pregnancy, lactation, infancy and school-aged children, with the preparation of a grant proposal applied to one of these life stages.

634.Nutrition Education. (2)

Theories that guide nutrition education; nutrition education programs for various target populations; designing and implementing a nutrition education intervention.

NDFS 601 & NDFS 602

635.Advanced Topics in Human Obesity. (2)

Neuro-endocrine, genetic, physiologic, and psychological determinants of human obesity; evaluation of current treatments and preventative measures with diet, activity, and behavior modification.
NDFS 435

637.Advanced Management in Dietetics. (2)

Theory and application of management principles in dietetics.
NDFS 374, 375, 445, 458; or equivalents.

638.Advanced Clinical Nutrition. (2)

Theory, techniques, and practices in medical nutrition therapy.
NDFS 300, 356, 466; or equivalents.

652.Carbohydrates and Their Reactions in Foods. (3)

Sugars, higher saccharides, starches, pectins, gums, hemicelluloses, celluloses, and their derivatives and their functions and reactions in foods.
NDFS 450

654.Proteins and their Reactions in Foods. (3)

Plant and animal proteins and their functions and changes during food processing; food enzyme properties.
NDFS 450

656.Food Lipids and Their Reactions in Foods. (3)

Lipids and their reactions in foods with other components of the food system and/or the surrounding environment; lipid-processing techniques.
NDFS 450

691R.Graduate Seminar. (0.5)

Reports and discussion on research and current literature.

697R.Research. (1-3)

698R.Master's Project. (1-9)

Applied project demonstrating skills, knowledge, and competencies in the nutrition and dietetics field.

699R.Master's Thesis. (1-9)

FACULTY

Bellini, Sarah *Assistant Professor*, PhD, Utah State University, 2012. Nutrition Assessment of Malnutrition

Christensen, Merrill J. *Professor*, PhD, Massachusetts Institute of Technology, 1982. Molecular Mechanisms of Cancer Risk Reduction by Diet

Dunn, Michael L. *Professor*, PhD, Cornell University, 1996. Product Development; Food Preservation and Storage; Food Industry Management

Fullmer, Susan *Teaching Professor*, PhD, Brigham Young University, 2004. Role of Diet and Exercise on Bone and Energy Metabolism

Hancock, Chad *Associate Professor*, PhD, University of Missouri, Columbia, 2005. Skeletal Muscle Energy Metabolism

Jefferies, Laura K. *Assistant Professor*, PhD, Utah State University, 2011. Food Sensory Analysis; Food Engineering

Kenealey, Jason *Assistant Professor*, PhD, University of Wisconsin-Madison, 2011. Cell Signaling; Cancer Treatments

Patten, Emily Kay *Assistant Professor*

Pike, Oscar *Professor*, PhD, Purdue University, 1986. Food Preservation and Storage; Food Analysis

Richards, Rickelle *Associate Professor*, PhD, University of Minnesota, Twin Cities, 2007. Community Nutrition; Food Insecurity

Steele, Frost M. *Associate Professor,*
PhD, Purdue University, 1990.
Food Microbiology; Food Safety;
Food Preservation and Storage

Stokes, Nathan *Assistant Professor,*
PhD

Tessem, Jeffery S. *Assistant Professor,*
PhD, University of Colorado,
2007. Pancreatic Beta Cell
Function and Diabetes

Williams, Donna P. *Assistant*
Teaching Professor, PhD

PHYSICS AND ASTRONOMY

Chair: Vanfleet, Richard R.
Graduate Coordinator: Hirschmann,
Eric W.

N-334, Provo, UT 84602-4604
(801) 422-9299
graduatesecretary@physics.byu.edu
<http://physics.byu.edu>

THE PROGRAMS OF STUDY

The Department of Physics and Astronomy offers graduate training in a variety of subjects including acoustics, astronomy, atomic and molecular physics, condensed matter, optics, plasma, and theory. The department provides abundant opportunities and support for its students and expects them to experience the excitement of discovering new knowledge as they contribute to the on-going development of these age-old disciplines.

Three degrees are offered through the Department of Physics and Astronomy: Physics-MS, Physics-PhD, and Physics and Astronomy-PhD.

The average number of MS and PhD students in the department is twenty-two and fourteen, respectively. The expected time to complete a degree is two to three years for the MS and five to six years for the PhD.

Physics - MS

The master of science degree prepares recipients for work and research in industry, government, or teaching. It is commonly earned by those who intend to continue on for the PhD.

Requirements for Degree

Credit hours (30): Students must pass a minimum of 24 hours in approved course work with a C- grade or better in each class and complete 6 hours of thesis research in Phsc 699R. The final GPA must be 3.0 or above.

- Required courses: Students are required to enroll in Phscs 691R each semester of residence and in Phscs 696R the first two semesters of residence.
- Study list: By the beginning of the second semester of study a student must be accepted as a research student by a member of the department graduate faculty and with their guidance submit a study list which is the list of courses they will take to complete the 30 hour requirement. This list must be approved by the graduate coordinator.
- Undergraduate credit: Up to 6 hours of coursework may be from undergraduate courses (300 level or higher) upon approval of the graduate coordinator.
- Prospectus: In the first year of residency a prospectus detailing the proposed thesis research must be submitted and defended before the student's advisory committee.
- Thesis: A thesis must be completed, successfully defended in an oral examination before the student's advisory committee.

Students completing this master's degree with a grade of B- or better in 5 non-repeatable courses who pass the qualifying exam and defend their MS thesis at the level of a PhD candidacy exam may smoothly transition into the Physics or Physics and Astronomy PhD program.

FINANCIAL ASSISTANCE

Qualified graduate students receive financial aid that may take the form of one or more of the following: teaching assistantships, research assistantships, scholarships (including the John Einar Anderson Scholarship and Copley Fellowship), internships, university-sponsored fellowships, or tuition awards. The amount of financial aid given depends on individual merit.

RESOURCES AND OPPORTUNITIES

Within the department there are currently six recognized research specialties: Acoustics; Astronomy; Atomic, Molecular, and Optical Physics; Condensed Matter Physics; Plasma Physics; Theoretical and Mathematical Physics.

Acoustics. The acoustics research program at BYU is cross-disciplinary, involving the treatment of both fundamental and applied problems in acoustics and vibration using analytical, numerical, and experimental means. It focuses primarily on acoustic signal processing, active and passive noise and vibration control, aeroacoustics, architectural acoustics, audio acoustics, nonlinear acoustics, outdoor sound propagation, and sound-structure interactions. Many resources are readily available for the effective simulation, measurement, and control of physical systems. In addition to strong computational facilities, the program has acoustical laboratories with extensive state-of-the-art measurement equipment, two anechoic chambers, two reverberation chambers, and a variable acoustics chamber that can be used for experimental studies.

Astronomy. Optical photometric and spectroscopic research at BYU is conducted at our own observatories using telescopes ranging from 0.3 to 0.9 m. There is frequent use of Hubble Space Telescope and Spitzer Space Telescope data and data from observatories in Arizona, Canada, Chile, and South Africa as well as from national and international radio observatories. Topics of current research include evolution of variable stars, especially classical and dwarf Cepheids; the extragalactic distance scale; photometric standard systems; interstellar reddening; old and young galactic star clusters; high mass x-ray binaries; pre-main sequence objects; active galactic nuclei; galaxies in or near cosmic voids; brown dwarf atmospheres; transiting planets; interferometric and single dish studies of MASER and molecular

emission from star forming regions, late-type OH/IR stars, supernova remnants, AGN, and starburst phenomena; and theoretical studies of black holes and neutron stars.

Atomic, Molecular, and Optical Physics. Computational and experimental studies of ultrafast laser high harmonic generation, quantum measurement, atom and ion interferometry, strongly coupled plasmas, atomic spectroscopy, optical properties of materials in the EUV, thin film deposition and characterization, EUV and x-ray optics, neutron detector development, and quantum optics.

Condensed Matter Physics. Condensed matter physics studies the macroscopic and microscopic properties of the "condensed" phases of matter: metals, insulators, semiconductors, superconductors, nanostructures, liquids, and so forth. Nationally, this is the largest and most active area of physics research. Our interests at BYU center on the electronic, magnetic, optical, structural, and dynamic properties of nanostructures and solids, using experimental, theoretical, and computational methods. Our current activities include creation of new nanostructured materials and their study by scanning probe microscopy, magnetometry, and electron-based microscopy and spectroscopy; X-ray and neutron-scattering; computational studies of novel alloys and nanostructures; group theoretical methods applied to phase transitions in crystals; motion and structure of defects in crystals; optical and magnetic resonance studies of electrons and spin coherence in semiconductor nanostructures; magnetic memory and reversal processes in ferromagnetic thin films; and dynamics of superparamagnetic nanoparticles.

Plasma Physics. Plasma physics research, both experimental and theoretical, centers on nonneutral plasmas. We have both pure-electron and pure-ion plasma experiments. Our pure-ion plasma experiments are currently centered around

measuring the half-life of Beryllium-7 in an ionized state. We also have substantial numerical modeling efforts in support of that goal. Our pure-electron plasma studies are aimed at understanding normal modes of oscillation in these plasmas in both the linear and nonlinear regimes.

Theoretical and Mathematical Physics. This group studies the foundations, techniques, and applications of relativity, quantum, and information theory. We develop numerical, algebraic, and analytic approaches to understand complex problems. Current projects include mergers of and energetic emissions from compact objects in general relativity; critical phenomena in nonlinear field theories; coherent behavior in dynamical systems; interaction between radiation and matter; molecular dynamics of defects and impurities in clusters and solids; spin systems and quantum entanglement. Our computational resources include extensive supercomputing facilities on campus and allocations at national supercomputing centers.

COURSE DESCRIPTION

PHSCS

500.(Phscs-Chem-C S-Geol-Math-MthEd-Stat) Business Career Essentials in Science and Math. (1.5)

Introduction for science, math, and statistics majors to careers in industry. Project planning, oral and written business presentations, business accounting, and technology readiness.

513R.Special Topics in Contemporary Physics. (0.5-3)

Topics generally related to recent developments in physics. Instructor's consent.

529.Advanced Observational Astronomy. (3)

Advanced techniques of observational astronomy, emphasizing knowledge and skills necessary to carry out observational scientific investigation in astronomy. PHSCS 427 & PHSCS 428

540.Electrical Engineering Principles and Practices for Physicists. (2)

Electronic instrumentation theory and methods. Computer aided circuit design and analysis with transforms, logic and computer simulation. Analog, digital, and discrete signal systems. Printed circuit design and system-on-a-chip creation. Phscs 140, 145, 220; Math 303 or 334; ability to program in Matlab.

545.Introduction to Plasma Physics. (3)

Introduction to plasma physics, including single-particle motion and both fluid and kinetic models of plasma behavior. PHSCS 321 & PHSCS 441

561.(Phscs-Me En) Fundamentals of Acoustics. (3)

Vibrating systems, elastic media, mechanical energy, and radiation. Sound generation, transmission, reflection, and reception. Phscs 318 or equivalent; Phscs 461 or concurrent enrollment.

571.Lasers and Atoms. (3)

Laser amplification, cavity design, and control and characterization of temporal and spatial modes. Interactions between lasers and atoms. Phscs 451, 471; or equivalents.

581.Solid-State Physics. (3)

Introduction to the physics of solids. Crystal structure and symmetry, X-ray diffraction, lattice vibrations, metals and semiconductors, superconductivity, thermal properties, magnetic properties, and dielectric and optical properties. Phscs 222 or equivalent.

585.Thin-Film Physics. (3)

Preparation, characterization, use, and special properties of modern thin films; interdisciplinary treatment. Of interest to students in applied physics and engineering. Phscs 222 or equivalent.

586.Transmission Electron Microscopy for Physical Science and Engineering. (3)

Practical and theoretical aspects of sample preparation, basic and advanced imaging, electron diffraction, and other analytical materials characterization techniques on the transmission electron microscope (TEM).

587.Physics of Semiconductor Devices. (3)

Device physics, with an in-depth study of the MOS transistor and other nanoscale computing devices. PHSCS 281; or PHSCS 581; or EC EN 450

588.Scanning Electron Microscopy (SEM) for Physical Science and Engineering. (3)

Theoretical aspects of sample preparation, basic and advanced imaging, X-ray energy dispersive spectrometry, and other analytical materials characterization techniques on the scanning electron microscope (SEM).

599R.Academic Internship. (0.5-9)

Cooperative education internships off campus. Department internship coordinator's consent.

601.Mathematical Physics. (3)

Topics in modern theoretical physics, including applications of matrix and tensor analysis and linear differential and integral operators. Phscs 318, Math 334; or equivalents.

602.Mathematical Physics. (3)

Topics in modern theoretical physics, including applications of matrix and tensor analysis and linear differential and integral operators. Phscs 318, Math 334; or equivalents.

611.Stellar Astrophysics 1. (3)

Theory of stellar atmospheres and the internal structure of stars. Instructor's consent.

612.Stellar Astrophysics 2. (3)

Theory of stellar atmospheres and the internal structure of stars. Instructor's consent.

618.Advanced Topics in Theoretical Physics. (3)

Introductory group theory. Basic representation theory and developments, with applications to quantum mechanics and molecular and solid-state physics.

625.Theory of Relativity. (3)

Review of special relativity and general relativity, with applications to modern astrophysics. Phscs 451 or equivalent.

626.Relativistic Astrophysics. (3)

Applications of general relativity to modern astrophysics, including gravitational collapse, black holes, cosmological models, gravitational waves, etc. PHSCS 625

627.Galactic Astrophysics 1. (3)

Astrophysics of the interstellar medium and galactic structure. Instructor's consent.

628.Galactic Astrophysics 2. (3)

Astrophysics of the interstellar medium and galactic structure. Instructor's consent.

641.Mathematical Theory of Electricity and Magnetism. (3)

Advanced electrostatics and magnetostatics, Maxwell's equations and electromagnetic waves, relativistic electrodynamics, radiation theory, and interaction of matter with electromagnetic fields. Phscs 442 or equivalent.

PHYSICS AND ASTRONOMY

642.Mathematical Theory of Electricity and Magnetism. (3)

Advanced electrostatics and magnetostatics, Maxwell's equations and electromagnetic waves, relativistic electrodynamics, radiation theory, and interaction of matter with electromagnetic fields.
PHSCS 641

645.Magnetohydrodynamic Theory of Plasmas. (3)

Plasma equilibrium and dynamics using magnetohydrodynamic theory with application to fusion and astrophysical plasmas.
PHSCS 545

651.Quantum Mechanics. (3)

Nonrelativistic quantum mechanics, with applications.
Phscs 451 or equivalent.

652.Quantum Mechanics. (3)

Nonrelativistic quantum mechanics, with applications.
PHSCS 602; Phscs 451 or equivalent.

660.(Phscs-Me En 562) Acoustic Systems. (3)

Analyzing and modeling electro-mechano-acoustic systems. Transducers, calibration, and acoustical measurements. Sound sources, arrays, coupling, radiation, and directivity. Duct acoustics and acoustic filters.
Phscs 561 or instructor's consent.

661.Advanced Fluid Acoustics. (3)

General solutions of the wave equation with applications. Kirchhoff-Helmholtz integral theorem. Sound radiation from generalized sources. Attenuation of propagating waves. Acoustic reflection, absorption, and scattering. Enclosed sound fields. Room acoustics. Energy-based acoustics.
Phscs 561 or instructor's consent.

662.Interactions of Sound Fields and Vibrating Structures. (3)

Sound-structure interactions. Sound transmission through panels and sound-isolation techniques. Advanced passive and active techniques in sound and vibration control. Near-field acoustic holography.
Phscs 561 or instructor's consent.

670.Quantum Optics. (3)

Quantum description of light and interactions with matter. Nonlinear optics.
Phscs 452, 471; or equivalents.

671.X-Ray Physics. (3)

Physical characteristics of X-ray generation, optics, and experimental applications. Methods of X-ray imaging emphasized.
PHSCS 581 & PHSCS 602; Phscs 452 or equivalent.

691R.Colloquium. (0.5)

696R.Introduction to Research. (0.5)

One or two research areas to be selected, with 20 hours of participation required each semester.

697R.Research. (0.5-6)

699R.Graduate Thesis/Dissertation. (1-9)

711R.Advanced Topics in Physics. (0.5-3)

Recent and upcoming topics include chaos, thin films, phase transformations, amorphous solids, quantum optics, astronomy using nontraditional frequencies, and particle physics.
Instructor's consent.

721.Dynamics. (3)

Advanced treatment of classical mechanics, including Lagrange's and Hamilton's equations, rigid body motion, and canonical transformations.
PHSCS 601 & PHSCS 602; Phscs 321 or equivalent.

727.Extragalactic Astrophysics and Cosmology 1. (3)

Astrophysics of galaxies, active galactic nuclei, and cosmology.
Instructor's consent.

728.Extragalactic Astrophysics and Cosmology 2. (3)

Astrophysics of galaxies, active galactic nuclei, and cosmology.
Instructor's consent.

731.Statistical Mechanics. (3)

Advanced thermodynamics, classical statistical mechanics, quantum statistics, and transport theory.
PHSCS 601 & PHSCS 651

745.Kinetic Theory of Plasmas. (3)

Plasma equilibrium and dynamics using a kinetic description, including collisionless damping and collisional transport.
PHSCS 545 & PHSCS 642 & PHSCS 721

751.Advanced Quantum Theory. (3)

Topics in relativistic quantum mechanics, including quantum field theory.
PHSCS 652

752.Advanced Quantum Theory. (3)

Topics in relativistic quantum mechanics, including quantum field theory.
PHSCS 652

781.Modern Theory of Solids. (3)

Quantum theory of solids, emphasizing the unifying principles of symmetry, energy-band theory, dynamics of electrons and of periodic lattices, and cooperative phenomena.
PHSCS 581 & PHSCS 651

782.Modern Theory of Solids. (3)

Quantum theory of solids, emphasizing the unifying principles of symmetry, energy-band theory, dynamics of electrons and of periodic lattices, and cooperative phenomena.
PHSCS 581 & PHSCS 651

795R.Readings in the Research Literature. (1-3)

Focused readings and student presentations based on these readings.
Departmental approval.

FACULTY

Allred, David D. *Professor, PhD,* Princeton University, 1977. Surfaces, Multilayers, and Nanoscale Thin Films; EUV and Soft X-Ray Optics

Anderson, Brian E. *Assistant Professor, PhD*

Bergeson, Scott D. *Professor, PhD,* University of Wisconsin, 1995. Experimental Atomic Physics

Campbell, Branton J. *Associate Professor, PhD,* University of California, Santa Barbara, 1999. Experimental Condensed Matter Physics

Chesnel, Karine *Assistant Professor, PhD,* Joseph Fourier University, France, 2002. Experimental Condensed Matter Physics

Colton, John *Associate Professor, PhD,* University of California, 2000. Experimental Condensed Matter Physics

Davis, Robert C. *Professor, PhD,* University of Utah, 1996. Experimental Condensed Matter Physics

Durfee, Dallin S. *Associate Professor, PhD,* Massachusetts Institute of Technology, 1999. Experimental Atomic Physics

Gee, Kent *Associate Professor, PhD,* Pennsylvania State University, 2005. Acoustics

Hart, Grant W. *Associate Professor, PhD,* University of Maryland, 1983. Plasma Physics

Hart, Gus L. W. *Professor, PhD,* University of California, Davis, 1999. Computational Condensed Matter Physics

Hintz, Eric G. *Associate Professor, PhD,* Brigham Young University, 1995. Observational Astrophysics

Hirschmann, Eric W. *Associate Professor, PhD,* University of California, Santa Barbara, 1996. Theoretical and Computational Physics

Joner, Michael D. *Research Professor, PhD*

Leishman, Timothy W. *Professor, PhD,* Pennsylvania State University, 2000. Acoustics

Moody, J. Ward *Professor, PhD,* University of Michigan, 1986. Observational Astrophysics

Neilsen, David W. *Associate Professor, PhD,* University of Texas, Austin, 1999. Gravitational Physics

Peatross, Justin B. *Professor, PhD,* University of Rochester, 1993. High-Intensity Laser Physics

Rees, Lawrence B. *Professor, PhD,* University of Maryland, 1983. Nuclear Physics

Sommerfeldt, Scott D. *Professor, PhD,* Pennsylvania State University, 1989. Acoustics

Spencer, Ross L. *Professor, PhD,* University of Wisconsin, 1979. Theoretical Plasma Physics

Stephens, Denise *Assistant Professor, PhD,* New Mexico State University, 2001. Observational Astrophysics

Transtrum, Mark K. *Assistant Professor, PhD*

Turley, R. Steven *Professor, PhD,* Massachusetts Institute of Technology, 1984. Computational and Atomic Physics

Vanfleet, Richard R. *Professor, PhD,* University of Illinois, 1997. Electron Microscopy; Materials Physics

Ware, Michael J. *Associate Professor, PhD,* Brigham Young University, 2001. Quantum Physics

PHYSIOLOGY AND DEVELOPMENTAL BIOLOGY

Chair: Woodbury, Dixon J.
Graduate Coordinator: Reynolds, Paul R.

Program Manager: Provost, Connie L.

4005 LSB, Provo, UT 84602-5245
(801) 422-3706
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THE PROGRAMS OF STUDY

Physiology is the study of the functions of body systems. Developmental Biology is the study of how specific genes govern differentiation of cells, tissues, and organs with unique structure and functions. Neuroscience is the study of the development and function of the central nervous system and its connection to influencing/regulating behavior.

Graduate programs within the department offer research training and classroom instruction in a wide range of areas pertaining to these disciplines. A biophysics research group is also part of the department. Areas of research include neuroendocrinology and reproduction, endocrine and immune interactions, development of the central nervous system, hereditary connective tissue disorders, mouse and chick models of development, exercise physiology and glucose metabolism, membrane transport and channel structure, synaptic vesicle recycling, and blood pressure control by the autonomic nervous system.

The Department of Physiology and Developmental Biology offers four graduate degrees: Physiology and Developmental Biology-MS, Neuroscience-MS, Physiology and Developmental Biology-PhD, and Neuroscience-PhD.

PHYSIOLOGY AND DEVELOPMENTAL BIOLOGY

The department has approximately thirty-five graduate students enrolled each year. Students working toward a master's degree generally complete all requirements within two years. PhD students generally complete all requirements in four to five years.

Neuroscience - PhD

Course work and research that emphasize the integration of molecular biology, developmental biology, biophysics, neuroanatomy, neurophysiology, neuroendocrinology, neuroimmunology, cognition, and behavioral neuroscience is offered through this PhD degree program. Students are required to develop a strong background in the principles of neuroscience and develop the intellectual background and technical expertise necessary for successful research projects in their area of specialization. Publication of the research in peer-reviewed journals is expected but not required.

Requirements for Degree

Credit hours: 54 hours, including 18 hours of dissertation (Neuro 799R).

- Students who have earned a master's degree must complete at least 36 semester hours of additional graduate work at BYU beyond the master's degree.
- Required courses: Bio 503 (1 hour); Neuro 601 (3 hours), 649R (2 hours), 694R (2 hours), 696R (2 hours); Stat 511 (3 hours). One semester (2 credits) of Neuro 649R must be performed in a laboratory different than the laboratory of the student's graduate committee chair.
- A seminar must be presented each year (PDBio 694R).
- A professional development requirement must be met (PDBio 689R).
- Dissertation: standard university dissertation format or journal publication format.

- Examinations: (A) comprehensive written and oral examination; (B) defense of dissertation.

For a complete list of neuroscience faculty, please click here: <http://graduatestudies.byu.edu/content/neuroscience-program>

FINANCIAL ASSISTANCE

The Department of Physiology and Developmental Biology offers the following financial aid: teaching assistantships, research assistantships, and tuition awards. Specific endowment fund awards are also available.

RESOURCES AND OPPORTUNITIES

Program resources include the laboratories and equipment of department faculty within the Life Science Building and the Eyring Science Center. An electron microscope laboratory, with both transmission and scanning microscopes, is also located on campus. A DNA sequencing center is available in the Widtsoe Building.

COURSE DESCRIPTION

PDBIO

520R.Advanced Topics in Clinical Human Anatomy. (1-2)

Applied clinical anatomy lectures and lab exercises.
PDBIO 220; Or equivalent.

550R.Molecular Dynamics. (0.5-4)

Close interaction between small groups of students and instructor on topics in physiology, developmental biology, or biophysics. Topics vary. Instructor's consent.

550R.Advanced Topics in Physiology and Developmental Biology. (0.5-4)

Close interaction between small groups of students and instructor on topics in physiology, developmental biology, or biophysics. Topics vary. Instructor's consent.

561.Physiology of Drug Mechanisms. (3)

Overview of physiological and pharmacological mechanisms and principles of human therapeutics as applied to clinically significant pathophysiology.
PDBIO 362

562.Reproductive Physiology. (3)

Mammalian reproductive physiology.
PDBio 362 or equivalent.

565.Endocrinology. (3)

Mammalian hormones.
PDBio 362 or instructor's consent.

568.Cellular Electrophysiology and Biophysics. (3)

Using electrophysiology and biophysics as an approach to study of physiology. Extensive look at ion channels and cell signaling.
PDBIO 362 & PHSCS 140; or PDBIO 362 & PHSCS 220

582.Developmental Genetics. (3)

Gene function and regulation during cell specification and differentiation, pattern formation, and organogenesis in developing embryo.
PDBio 482 or equivalent.

601.Cellular and Molecular Physiology. (3)

Primary literature used to explore modern concepts of physiology at the cellular and molecular level. Topics include muscle function, transport mechanisms, cell signaling, and ion channels.
PDBio 362, 363; or equivalents.

649R.Laboratory Research. (1-6)

Laboratory research for graduate students.
Instructor's consent.

650R.Advanced Developmental Biology. (1-3)

Instructor's consent.

650R.Molecular Neuroscience. (1-3)

Instructor's consent.

650R.Selected Topics in Physiology, Developmental Biology, and Neuroscience. (1-3)

Topics vary.

Instructor's consent.

650R.Renal and Gastrointestinal Physiology. (1-3)

Instructor's consent.

650R.Differential Equations in Biology. (1-3)

Instructor's consent.

664.Cardiovascular and Respiratory Physiology. (2)

Advanced course based on current research literature.

PDBio 362 or equivalent.

689R.Practicum in Life Sciences Teaching or Research. (0.5-3)

Curricula, principles, concepts, and experiences in teaching life sciences effectively or methods of effective research and grantsmanship in the life sciences.

694R.Research Presentation. (0.5)

Oral presentation of graduate research project (introduction, methods, hypothesis, results, conclusions).

696R.Graduate Seminar. (0.5)

Seminar series organized and run by the Department of Physiology and Developmental Biology. Speakers are enlisted from both inside and outside the university.

699R.Master's Thesis. (1-6)

799R.Doctoral Dissertation. (1-18)

FACULTY

Alder, Jonathan K. Assistant

Professor, PhD, Johns Hopkins University, 2007. Telomeres Contribution to Human Health and Disease, Specifically Lung Disease

Arroyo, Juan A. Assistant

Professor, PhD, Southern Illinois University School of Medicine, 2003. Molecular signaling of trophoblast cells apoptosis and the regulation of cell invasion during pregnancies complicated with intrauterine growth restriction, preterm delivery, and preeclampsia

Barrow, Jeffery R. Associate Professor,

PhD, University of Utah, 1999. Molecular Mechanisms of Development of Limbs and Craniofacial Structures; Tumorigenesis

Bikman, Benjamin T. Assistant

Professor, PhD, East Carolina University, 2008. Obesity and Metabolism

Brown, Michael D. Teaching

Professor, PhD, Colorado State University, 1999. Regulation of Axon and Dendrite Extension and Pathfinding During Nervous System Development

Busath, David D. Professor, MD,

University of Utah, 1978. Electrophysiology; Molecular Modeling; Molecular Biophysics

Edwards, Jeffrey G. Associate

Professor, PhD, University of Utah, 2003. Synapse Activity and Structure

Hansen, Jason M. Assistant Professor,

PhD, University of Michigan at Ann Arbor, 2001. Oxidative Stress-Related Changes to Cell Signaling During Embryonic Development

Hansen, Marc D. Associate Professor,

PhD, Stanford University, 2002. Molecular Basis of Cell-Cell Adhesion in Development and Metastasis

Hill, Jonathon T. Assistant Professor,

PhD, Columbia University, 2010. Congenital Heart Birth Defects

Judd, Allan M. Professor, PhD,

West Virginia University, 1981. Physiology; Neuroendocrinology

Kooyman, David L. Professor,

PhD, Ohio University, 1993. Mechanisms of Gene Expression

Porter, James P. Professor, PhD,

University of California, San Francisco, 1982. Neuroendocrinology; Hypertension

Reynolds, Paul R. Associate

Professor, PhD, University of Cincinnati, Cin. Children, 2004. Developmental Role of Autocrine/Paracrine Signaling in Lung During Branching Morphogenesis

Silcox, Roy W. Associate Professor,

PhD, North Carolina State University, 1986. Reproductive Physiology; Management; Superovulation; Embryonic Development

Stark, Michael R. Associate Professor,

PhD, University of California, Irvine, 1998. Developmental Biology

Sudweeks, Sterling N. Associate

Professor, PhD, University of Utah, 1997. Pharmacology of the Nervous System; Ion Channels

Suli, Arminda Assistant Professor,

PhD, University of Utah, 1999. Neural Circuitry Development

Thomson, David M. Associate

Professor, PhD, East Carolina University, 2005. Intracellular Signaling Pathways Controlling Skeletal Muscle Growth and Metabolism

Wisco, Jonathan J. Associate Professor,

PhD, Boston University School of Medicine, 2003. Histological Validation of Imaging Biomarkers for Neurodegenerative Diseases and Neurodevelopmental Disorders

Woodbury, Dixon J. Professor, PhD,

University of California, Irvine, 1986. Molecular Mechanisms of Exocytosis; Neuroscience of Transmitter Release; Electrophysiology of Ion Channels

PLANT AND WILDLIFE SCIENCES

Chair: McMillan, Brock R.

Graduate Coordinator: Geary, Bradley

4105 LSB, Provo, UT 84602-5183

(801) 422-2760

pws-grad-secretary@byu.edu

<http://pws.byu.edu/>

THE PROGRAMS OF STUDY

The Department of Plant and Wildlife Sciences offers graduate training and education in a variety of areas: plant sciences, biotechnology, genetics, environmental science, ecology, soil science, and wildlife and wildlands conservation. Those admitted to this program will have completed BS degrees with strong backgrounds in the basic mathematical, physical, and biological sciences. Students completing requirements in our graduate degree programs will be prepared to accept employment in plant genetics, biotechnology, conservation, ecology, environmental science, wildland and wildlife management, or consulting or to continue graduate education toward a PhD and postgraduate studies.

Four degrees are offered through the Department of Plant and Wildlife Sciences: Environmental Science-MS; Genetics and Biotechnology-MS; Wildlife and Wildlands Conservation-MS; and Wildlife and Wildlands Conservation-PhD.

These graduate programs are supported by faculty members within the department. Their research and teaching interests include wildland ecology, wildlife biology, plant ecology, genetics and biotechnology, plant growth under environmental stress, urban landscape environments, bioremediation of contaminated soils and water, and both modern and ancient agricultural environments.

All MS and PhD degrees are earned in thesis-only programs. Students are expected to present their theses in the form of one or more manuscripts ready for submission to refereed journals.

Environmental Science - MS

Pursuit of the MS degree in environmental science provides students with research and education opportunities in environmental protection and remediation and in plant growth and physiology. Students will select graduate course work in soil science, biology, and environmentally related courses taught in departments across the campus. Those completing program requirements will be well prepared for employment in environmental and agricultural consulting, teaching at the junior college level, and continued graduate studies for the PhD. Their research and teaching interests include: plant growth under environmental stress, invasive species, plant physiology, urban landscape environments, bioremediation of contaminated soils and water, and both modern and ancient agricultural environments. All emphases require original research topics with the results presented in thesis format. This research is expected to be of a publication quality and thesis style best reflecting that of a professional journal, thus facilitating timely submissions for publication. We also encourage formal presentations at professional meetings.

Requirements for Degree

Credit hours: (30): minimum 24 course work hours plus 6 thesis hours (PWS 699R).

- Undergraduate hours: no more than 10 semester hours may be applied toward master's degree.
- Thesis: completion of the thesis in scientific journal format and prepared for journal submission.

- Required courses: Two semesters of PWS 694R (seminar) and one semester of graduate statistics (Stat 511).
- Biannual progress reviews by advisory committee and graduate committee.
- Examinations: final oral defense of thesis.
- Minor: not required; students who do desire a minor may choose from botany, chemistry, computer science, food science, geology, geography, mathematics, microbiology, physics, statistics, range science, or zoology.

FINANCIAL ASSISTANCE

Teaching and research assistantships are offered on a competitive basis by the department. Tuition assistance is also available for both MS and PhD degrees.

RESOURCES AND OPPORTUNITIES

Ezra Taft Benson Agriculture and Food Institute. The major objective of the Institute is to raise the quality of life among the people of the world through improved nutrition and enlightened agricultural practices. Emphasis is placed on teaching and training students who wish to work in foreign countries and on training people from those countries in agriculture and food science practices that can be used to improve life. Research to improve agricultural practices, family nutrition, and appropriate technology is encouraged.

M. L. Bean Life Science Museum. Extensive biological collections are housed in the M. L. Bean Life Science Museum and are available for supervised student research. Curators and their students often conduct fieldwork throughout the U.S., and in many other parts of the world.

Lytle Ranch Preserve. Graduate students are able to do year-round research on desert plants and animals at the Lytle Ranch. This large preserve is located in the moderate desert climate of southwestern Utah.

USDA Forest Service Shrub Science Laboratory. Housed on the BYU campus, this laboratory supports one of the finest research programs on native shrubs in the world. Here eleven PhD research scientists with adjunct faculty appointments work with BYU faculty members and graduate students. Laboratories, greenhouses, and gardens on campus and around the state support studies on desert shrubs.

Other Laboratory and Field Resources. On the Provo campus are an arboretum, a small animal vivarium, a tissue culture room, several environmental chambers, and excellent greenhouse facilities. Laboratory facilities include gas chromatographs-mass spectrometers, isotope ratio mass spectrometers, transmission and scanning electron microscopes, ultra centrifuges, visible ultraviolet and infrared spectrophotometers, gas chromatographs, high-performance liquid chromatographs, infrared gas analyzers, atomic absorption spectrophotometer, inductively coupled plasma spectrophotometer, ion chromatograph, near infrared spectrophotometer, genome sequencer FLX instrument, and many other items.

Faculty and graduate students are currently engaged in a number of significant and interesting research projects, funded both internally and externally.

COURSE DESCRIPTION

PWS

505.Aquatic and Terrestrial Biogeochemistry. (3)

An in-depth treatment of global biogeochemical cycles, focusing on cycles of carbon, oxygen, nitrogen, phosphorus, and sulfur in the atmosphere, hydrosphere, and lithosphere. Special attention will be given to the microbial mediated transformations and the impact of human disturbances in terrestrial and aquatic environments.

512.Rangeland Landscape Ecology and Geographic Information Systems. (3)

Applying landscape ecology theory to evaluate, describe, and predict spatial patterns and processes within rangeland ecosystems using geographic information systems (GIS), remote sensing, and global positioning systems (GPS).

513.Environmental Field Instrumentation. (4)

Hands-on course and lab teaching students how to use instrumentation in the field and in controlled settings to measure key environmental parameters. Learning the physical principles underlying sensors. Phscs 105 and PWS 282; or equivalents.

514.Soil Microbiology. (2)

Ecology and role of soil microorganisms in biogeochemical cycles, decomposition of organic matter and waste materials, and bioremediation of contaminated soils and water. Chem 105 and 106; or equivalents.

520.Saline and Sodic Soils. (3)

Physical and chemical properties of saline and sodic soils and irrigation waters--their diagnosis, reclamation, and management for sustainable crop production. PWS 305, Chem 105, 106, 107; or equivalents.

540.Plant Response to the Environment. (3)

Advanced plant physiological ecology principles. PWS 440 or equivalent; PWS 494R or concurrent enrollment.

547.Ungulate Conservation and Management. (2)

Integrating principles of natural history, population ecology, behavior, and conservation biology of North American ungulates. Special emphasis on management and conservation applications. PWS or Bio 350; and Bio 447; or equivalents.

551.Quantitative Ecology. (3)

Quantitative methods for ecological sampling and data analysis.

Bio 350 or equivalent; Stat 121 or 511 or concurrent enrollment.

553.Restoration Ecology. (3)

Nature of ecosystem disturbance and plant succession; developing science and practice of ecological restoration; case studies of applied restoration.

PWS 282, 416; Bio 350; or equivalents.

554.Wildlife Behavioral Ecology. (3)

Integrating principles of ethology, sociobiology, and behavioral ecology using examples from wildlife resources; behavioral sampling methods.

Bio 100, 350; or equivalents.

559.Molecular Plant Breeding. (3)

Molecular genetics methods applied to improvement of economically important plants. Theory and methods of plant transformations.

PWS 265, 340, 485, 586, PDBio 360; or equivalents; PWS 494R or concurrent enrollment.

560.Soil and Plant Analysis. (2)

Laboratory chemical analysis of soils and plant materials in soil and plant research.

Chem 105, 106, 107; or equivalent.

PLANT AND WILDLIFE SCIENCES

575.Plant Pathology. (3)

Concepts associated with symptoms, development, control, and classification of plant diseases. Identification and classification of plant fungi, bacteria, and viruses. PWS 100 or equivalent.

586.Plant Cell Biology. (3)

Molecular aspects of the structural and functional characteristics of plant cells, emphasizing characteristics of plant cells setting them apart from animal cells. PDBio 360, PWS 340, 440; or equivalents.

598R.Advanced Topics in the Plant and Wildlife Sciences. (1-3)

629.Conservation of Mega and Meso Carnivores. (3)

Life histories of representative carnivores with political, popular, and managerial problems surrounding their existing and proposed conservation.

633.Biometry and Experimental Design. (3)

The design, analysis, and interpretation of biological research using modern analytical tools and relevant software. Stat 121 or 510 or equivalent.

634.Analysis and Management of Plant and Animal Populations. (3)

Exposure to common tools for analysis and management of plant and animal populations. Program mark, program distance, movement and home range analysis, point pattern analysis, etc.

660.Environmental Site Evaluation and Analysis. (2)

Sampling, analyzing, and interpretation of plant, water, and soil matrixes in native, agricultural, and urban sites. Emphasis on completing Environmental Site Assessments. PWS 282 & 283; PWS 405 or 406; or equivalents.

670.Analysis of Complex Genomes. (3)

Genetic analysis of quantitative traits in plants and animals. PWS 340 or equivalent.

673R.Plant Cytogenetics. (3)

PWS 340, 485; or equivalents.

673R.Cytogenetics. (3)

Chromosome structure and function; classical and molecular cytological methods of chromosome and genome analysis. PWS 340, 485; or equivalents.

694R.Seminar. (1)

697R.Research. (1-9)

698R.Master's Project. (1-6)

699R.Master's Thesis. (1-9)

799R.Doctoral Dissertation. (1-9)

FACULTY

Aanderud, Zachary T. *Associate Professor*, PhD, University of California, Davis, 2006. Microbial and Ecosystem Ecology

Allen, Phil S. *Professor*, PhD, University of Minnesota, 1990. Seed Biology; Ecological Restoration

Anderson, Val Jo *Professor*, PhD, Texas A&M University, 1988. Range Ecology; Ecophysiology

Chaston, John M. *Assistant Professor*, PhD

Coleman, Craig E. *Associate Professor*, PhD, Pennsylvania State University, 1992. Genetics and Biotechnology

Allphin Flinders, Loreen *Associate Professor*, PhD, University of Utah, 1996. Plant Ecology; Plant Reproductive Biology; Conservation Genetics

Geary, Bradley D. *Associate Professor*, PhD, Washington State University, 1999. Plant Pathology; Plant Pest Management

Hansen, Neil C. *Associate Professor*, PhD, University of Minnesota, 1998. Water and Soil Resources

Hopkins, Bryan G. *Professor*, PhD, Kansas State University, 1995. Plant and Soil Sciences

Jellen, Eric N. *Associate Professor*, PhD, University of Minnesota, 1992. Cytogenetics; Genetic Mapping; Plant Genetic Resource Conservation

Larsen, Randy *Assistant Professor*, PhD, Utah State University, 2008. Wildlife Ecology and Management

Madsen, Matthew D. *Assistant Professor*, PhD, Brigham Young University, 2010. Wildlife & Wildland Conservation

Maughan, P. Jeffrey *Professor*, PhD, Virginia Polytechnic Institute & State University, 1996. Plant Genetics

McMillan, Brock R. *Professor*, PhD, Kansas State University, 1999. Population and Community Ecology of Mammals and Birds

Petersen, Steven L. *Associate Professor*, PhD, Oregon State University, 2004. Landscape Ecology

Robinson, Todd F. *Associate Professor*, PhD, Cornell University, 1998. Growth Biology; Metabolic Processes

Roundy, Bruce A. *Professor*, PhD, Utah State University, 1984. Rangeland Restoration and Ecology

Smith, Thomas S. *Associate Professor*, PhD, Brigham Young University, 1992. Wildlife Ecology; Wildlife-Human Interactions; Wildlife Management and Ecology

St. Clair, Samuel *Associate Professor*, PhD, Pennsylvania State University, 2004. Plant Physiological Ecology

Stevens, Mikel R. *Professor*, PhD, University of Arkansas, 1993. Plant Breeding; Molecular Genetics

Stewart, J. Ryan *Associate Professor*, PhD, Iowa State University, 2005. Plant Ecophysiology; Bioenergy

Terry, Richard E. *Professor*, PhD, Purdue University, 1976. Soil Microbiology; Reclamation and Restoration of Environmentally Disturbed Sites

Udall, Joshua A. *Associate Professor*, PhD, University of Wisconsin, 2003. Plant Genetics and Gene Expression

PSYCHOLOGY

Chair: Hedges, Dawson

Director of Clinical Training:

Steffen, Patrick R. **Associate Chair/Graduate Coordinator:** Yamawake, Niwako

Associate Chair/Faculty:

Lambert, Michael J. **Executive**

Coordinator of Clinical Psychology:

Norton, Elizabeth

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[https://psychology.byu.edu/Pages/](https://psychology.byu.edu/Pages/ProgramOverview.aspx)

[ProgramOverview.aspx](https://psychology.byu.edu/Pages/ProgramOverview.aspx)

THE PROGRAMS OF STUDY

The mission of the Psychology Department is to discover, disseminate, and apply principles of psychology within a scholarly framework that is compatible with the values and purposes of Brigham Young University and its sponsor.

Two degrees are offered through the Department of Psychology: Psychology-PhD and Clinical Psychology-PhD.

Students are selected after careful consideration of their application; GPA, GRE general test scores, letters of recommendation, and areas of academic interest. The PhD program is designed to be completed in four years and the Clinical PhD program in five years (including a one-year internship).

For more detailed information regarding the Psychology PhD program, click here: <https://psychology.byu.edu/Pages/PsychPhD.aspx>

For more detailed information regarding the Clinical Psychology PhD program, click here: <https://psychology.byu.edu/Pages/ClinicalPhD.aspx>

Psychology - Clinical-MS

The Master of Science degree in Clinical Psychology is an embedded degree within the Clinical Psychology PhD training program. Students are admitted to

BYU's Clinical Psychology doctoral program with the expectation that they will complete the PhD degree and no students are independently admitted to the Master of Science Degree. Please see the Clinical Psychology PhD description for full accreditation and program details.

Psychology - Clinical - PhD

The clinical psychology training program at Brigham Young University leads to the PhD degree and is fully accredited by the Commission on Accreditation, formerly the American Psychological Association Accreditation.

(Information on accreditation can be obtained from the Commission on Accreditation, 202-336-5979, or the Office of Program Consultation and Accreditation, American Psychological Association, 750 First Street, NE Washington, DC 20002-4242, or at www.apa.org/ed/accreditation/.) This program is designed to be completed in five years, including a one-year, full-time internship at an approved agency. Candidates with varied backgrounds who have strong academic and clinical promise are encouraged to apply.

The philosophy of the clinical training program adheres to the scientist-practitioner model. Training focuses on academic and research competence as well as theory and practicum experiences necessary to develop strong clinical skills.

The program at Brigham Young University is eclectic in its theoretical approach, drawing from a wide range of theories and orientations in an attempt to give broad exposure to a diversity of traditional and innovative, empirically-supported approaches. All students receive a basic core of training in adult clinical psychology. They may also elect to take a special emphasis in (1) Child, Adolescent, and Family Clinical Psychology, (2) Clinical Neuropsychology, (3) Clinical Research, or (4) Clinical Health Psychology.

PSYCHOLOGY

Requirements for Degree

The program requires the development of broad competencies described in the

- *Handbook of Graduate Programs in the Department of Psychology* and the
- *Practicum Handbook*. Thus, the program is not merely a series of courses and experiences. In addition to the requirements listed below, the student must demonstrate competence to advance through the various phases of the degree program, including the internship and clearance for graduation.
- Credit hours (111 minimum; B grade or better in each class).
- Research requirements: 8 hours of graduate data analysis (Psych 501, 502); 6 hours of research methodology (Psych 504, 505); 18 hours of dissertation (Psych 799R).
- General core courses: 3 hours of biological bases of behavior (Psych 585); 6 hours of social-cultural bases of behavior (Psych 550, 645 or CPSE 751); 3 hours of cognitive-affective bases of behavior (Psych 575); 3 hours of human development (Psych 520); 3 hours of history and systems (Psych 510); 3 hours of personality (Psych 540), waived if undergraduate course is completed.
- Clinical core courses: 3 hours of ethics and standards (Psych 609); 9 hours of assessment (Psych 622, 623, plus an elective); 12 hours of psychotherapy (Psych 651, 652, 653, 654. Note: 654 is strongly recommended but not required for those in the neuropsychology emphasis area); 4 hours of psychopathology (Psych 611).
- Clinical practica: 19 hours of clinic practica (Psych 741R); 2 hours of clerkships (Psych 743R); 3 hours of case conferences (Psych 740R); 3 hours of externships optional but strongly recommended (Psych 700R); 6 hours of internship (Psych 745, 746, 747, and 748).

- Emphasis sequences: a sequence of elective courses may be taken in the following emphasis areas: Child, Adolescent, and Family Clinical Psychology; Clinical Neuropsychology; Clinical Research; Clinical Health Psychology.
- Second year research project, paper, exam, and presentation.
- Dissertation (including a manuscript in a form suitable for submission for publication appended to the dissertation) to be completed before the internship.
- Internship: One-year internship in a setting approved by the clinical director. Before entering the internship, students complete all other requirements.
- Examinations: (a) comprehensive examinations in second and third years; (b) oral defense of prospectus and dissertation.

For additional information about the program, write or call the secretary or the director of clinical training, 284 TLRB, Provo, UT 84602-8610, telephone (801) 422-4050.

Psychology - Clinical (MS) program requirements:

Students must demonstrate competence in various areas to receive the Psychology MS and continue to the Clinical Psychology PhD program. The master's curriculum corresponds to the first two years of training following receipt of the bachelor's degree and consists of required courses in the foundations of psychological evaluation and measurement, statistics and research methods, professional ethics, and clinical theory and practice. Students have three years to complete their masters degree requirements after admission to the Clinical Psychology PhD program and are not allowed to enroll in doctoral level courses during their fourth year of residence if these requirements have not been met.

Specific requirements of the MS Degree are detailed below:

- Credit hours (36 hour minimum; B grade or better in each class)
- Research data and analysis requirement: 11 hours of statistics and research methodology (Psych 501, 502, and 504)
- Clinical theory requirement: 3 hours of professional and ethical issues (Psych 309); 4 hours of psychopathology (Psych 611); 6 hours of assessment (Psych 622 and 623); and 6 hours of psychotherapy (Psych 651 and one of Psych 652 OR Psych 653).
- Master's thesis: Students will complete a master's thesis that includes no fewer than 6 thesis credit hours (Psych 699R). As noted above, students have three years to complete their degree requirements, including the thesis, and are not allowed to enroll in doctoral level courses during their fourth year of residence if these requirements have not been met.

FINANCIAL ASSISTANCE

Departmental financial aid is available in various forms: teaching and research assistantships, student instructorships, and tuition stipends.

RESOURCES AND OPPORTUNITIES

Comprehensive Clinic. This clinic is a unique interdisciplinary training and research facility housing audiovisual and computer resources and a staff of skilled technicians and secretaries to support graduate student and faculty research. The clinic currently functions as an APA-approved clinical psychology laboratory for the Psychology Department. In addition, the clinic provides the university and the broader community with mental health services, serving between 200 and 250 clients each week.

The clinic contains twelve counseling rooms, four seminar rooms, and two large classrooms equipped with video cameras and portable playback units. Fourteen small session rooms are equipped for audio recording.

Externship Opportunities. In addition to practicum experiences in the Comprehensive Clinic, the clinical program arranges a number of reimbursed training placements in community agencies as well as two required unpaid clerkship experiences, including such sites as Utah State Hospital, Utah State Prison, facilities for children with developmental disabilities, private practices, medical centers, and government agencies. These clerkships and externships are arranged and managed by the executive coordinator of clinical psychology and the director of clinical training and are supervised by on-site licensed professionals, who typically hold affiliated appointments in the Psychology Department. At present, clerkships and externships are available in more than 25 different settings. These opportunities provide an excellent foundation for the integration of classroom experiences with practical work applications.

Family, Home, and Social Sciences Computing Center. The center assists faculty and students with data processing and other computing needs on mainframe and personal computers. Technical support and consultation services for both statistics and graphics are available to students working on research projects, theses, and dissertations. Special computer facilities in the Psychology Department support research in psycholinguistics, neuroimaging, neurophysiology, social psychology, and the experimental analysis of human and animal behavior.

The FHSS College also provides additional research and academic support through the Camilla Eyring Kimball Chair; the Marjorie Pay Hinckley Chair; and the Mary Lou Fulton Chair.

COURSE DESCRIPTION

PSYCH

501.Data Analysis in Psychological Research 1. (4)

Using and interpreting major quantitative methods in psychology; some commonly used computer methods.
PSYCH 308; or instructor's consent.

502.Data Analysis in Psychological Research 2. (4)

Introduction to multivariate data analysis methods, including multivariate analysis of variance, factor analysis, discriminant analysis, multivariate multiple regression, canonical correlation, structural equations modeling, cluster analysis, etc.
PSYCH 501; or instructor's consent.

504.Research Design. (3)

Overview of designs used in psychotherapeutic literature, emphasizing critical analysis of empirical research.
Concurrent enrollment in Psych 501.

505.Clinical Research. (3)

Overview of research examining processes and outcomes of psychological treatments for psychological disorders.
PSYCH 503 & PSYCH 504; or instructor's consent.

510.History and Systems of Psychology. (3)

Survey of origins and development of modern psychology, including consideration of the schools and theoretical systems.
PSYCH 210; or equivalent; or instructor's consent.

511.Philosophy of Science for the Social Sciences. (3)

Issues in philosophy of science as they apply to social sciences, including methods, epistemology, and construction of knowledge.
Instructor's consent or admission to PhD program.

512.Qualitative Research Methods. (3)

Theories and methods of qualitative research emphasizing philosophical assumptions, question formulation, data gathering, interpretation, and presentation of findings.
Instructor's consent.

513R.Topics in Behavioral Neuroscience. (3)

Advanced topics and skills in behavioral neuroscience.
Psych 381 or equivalent or instructor's consent.

513R.Functional MRI Design and Analysis. (3)

Functional MRI experimental design and data analysis methods.
Psych 381 or equivalent or instructor's consent.

520.Advanced Developmental Psychology. (3)

Major research in developmental psychology, emphasizing theory, content, and methodology.
PSYCH 320 & PSYCH 321 & PSYCH 322; or equivalent; or instructor's consent.

531.Organizational Psychology. (3)

Personal and interpersonal aspects of organizational life: goal setting, decision making, problem solving, communication, control, leadership, motivation, and change.
PSYCH 330; or equivalent; or instructor's consent.

540.Personality Theory. (3)

Contemporary theories of personality developed within the framework of major psychological systems.
PSYCH 341; or equivalent; or instructor's consent.

550.Theory and Research in Social Psychology. (3)

Current theories and research on interaction with others.
PSYCH 350; or equivalent; or instructor's consent.

PSYCHOLOGY

552.Applied Social Psychology. (3)

Overview of domains in which social psychological theory and research have been applied in field settings.

PSYCH 352; or equivalent; or instructor's consent.

560.Learning Theory. (3)

Critical review of current theories and persistent issues.

PSYCH 361; or equivalent; or instructor's consent.

565.Motivational Psychology. (3)

Theoretical, historical, and empirical overview; recent trends and issues; role of animal studies; methodological issues.

PSYCH 365; or equivalent; or instructor's consent.

575.Cognitive Processes. (3)

Theory and research in perception, attention, language, problem solving, and other thinking processes.

PSYCH 370 & PSYCH 375; or equivalents; or instructor's consent.

578R.Seminar in Mathematical Psychology. (3)

Variable topics concerning the application of mathematical and statistical methods to psychology, with emphasis on jointly publishing a methods paper.

PSYCH 308; or equivalent.

583.Health Psychology. (3)

In-depth examination of behavior from perspective of health and disease

PSYCH 381 & PSYCH 382; or equivalents; or instructor's consent.

585.Human Neuropsychology/ Biological Bases of Behavior. (3)

Critical study of brain-behavior relationships.

PSYCH 381 & PSYCH 382; or equivalents; or instructor's consent.

605R.Professional Seminar in Psychology. (0.5)

Assessing current research across all domains of psychology and related fields; providing communication and career-seeking skills.

Acceptance into MS program.

609.Professional and Ethical Issues in Psychology. (1-3)

Ethical issues in professional and scientific psychology from a historical and contemporary framework.

Acceptance into psychology PhD program or clinical psychology PhD program.

611.Psychopathology. (4)

Diagnosis and etiology of mental and emotional disorders in children and adults.

Acceptance into clinical psychology program.

612.Developmental Psychopathology. (3)

Advanced study of etiology, diagnosis, prevalence, associated features, and theories of psychological and developmental disorders in children and adolescents.

PSYCH 611; Acceptance into clinical psychology program.

620R.Advanced Seminar in Developmental Psychology. (0.5)

A critical examination of recent topics and interests within developmental psychology.

Acceptance into psychology PhD program.

622.Assessment 1: Intelligence. (3)

Methods used in assessing intellectual status in children and adults.

Acceptance into clinical psychology program.

623.Assessment 2: Personality. (3)

Methods used in assessing the personality and behavioral characteristics of children and adults.

Acceptance into clinical psychology program.

626.Advanced Biological Bases of Development. (3)

An advanced examination of the biological foundations of social, emotional, perceptual, and cognitive development.

PSYCH 520

627.Advanced Social Development. (3)

An advanced examination of early social and emotional development in children, including parent-child and peer relationships as well as the development of social cognition.

PSYCH 520

628.Advanced Perceptual and Cognitive Development. (3)

An advanced examination of early perceptual and cognitive development in human infants and young children.

PSYCH 520

645.Cultural Diversity and Gender Issues. (3)

Clinical issues in the context of cultural diversity and contemporary social trends.

648R.Role of Theory in Psychotherapy. (3)

650R.Advanced Seminar in Social Psychology. (0.5)

A critical examination of recent topics and interests within social psychology.

Acceptance into psychology PhD program.

651.Psychotherapy 1: Relationship and Psychodynamic. (3)

Theory and techniques employed in psychotherapy that focus on relationship and psychodynamic approaches.

Acceptance into clinical psychology program.

652.Psychotherapy 2: Cognitive - Behavioral. (3)

Theory, treatment principles, and techniques of cognitive-behavioral therapy.

Acceptance into clinical psychology program.

653.Psychotherapy 3: Child and Adolescent. (3)

Theory and treatment techniques of child and adolescent therapy. Acceptance into clinical psychology program.

654.Psychtherapy 4: Group. (3)

Theory and techniques of small-group processes. Acceptance into clinical psychology program.

680.Clinical Neuropsychology. (3)

Comprehensive study of the human dysfunctional brain. PSYCH 585; Acceptance into clinical psychology program.

686R.Seminar in Health Psychology. (3)

Advanced topics in health psychology research and practice. Psych 583 or equivalent or instructor's consent.

687R.Seminar in Psychopharmacology. (3)

Major classes of psychoactive drugs, emphasizing drug-behavioral interactions. Psych 585 or equivalent.

693.Teaching Psychology. (3)

Prepares graduate students for independent teaching experiences. Enrollment in master's or PhD program.

694.Psychology Teaching Practicum. (1)

Lab portion of Psych 693 entailing actual teaching experience and its supervision. PSYCH 693

695R.Independent Readings. (0.5-3)

Faculty-supervised readings as arranged by student. Instructor's consent.

697R.Independent Research. (0.5-4)

Faculty-supervised research as arranged by student. Instructor's consent.

699R.Master's Thesis. (0.5-9)

Concluding research for master's program, culminating in final oral examination.

700R.Externship in Clinical Psychology. (0.5)

Supervised reimbursed experience in community agencies.

711R.Rorschach Technique. (0.5-3)

Intensive introduction to Rorschach Inkblot Technique, including administration, coding, scoring, and interpretation as specified in the Exner Comprehensive System. Acceptance into clinical psychology program.

711R.Topics in Clinical Psychology (0.5-3)

Theory and practice in specific topics. Acceptance into clinical psychology program.

711R.Advanced Child Assessment. (0.5-3)

Acceptance into clinical psychology program.

712R.Seminar in Neuroanatomy. (3)

Acceptance into clinical psychology program.

712R.Neuropsychology Assessment: Child. (3)

Acceptance into clinical psychology program.

712R.Topics in Neuropsychology. (3)

Current topics, including neuroanatomy and adult and child assessment. Other topics as determined by student interest. Acceptance into clinical psychology program.

712R.Neuropsychology Assessment: Adult. (3)

Acceptance into clinical psychology program.

720R.Advanced Topics in Developmental Psychology. (3)

A critical examination of recent topics and interests within developmental psychology. PSYCH 620R; instructor's consent.

740R.Case Conference. (0.5)

Case presentations; professional, ethical, and research issues pertinent to assessment and intervention. Acceptance into clinical psychology program.

741R.Integrative Practicum. (0.5-3)

Supervised assessment and intervention, integrating psychopathology diagnosis and treatment. Acceptance into clinical psychology program.

742R.Biofeedback. (3)

Acceptance into clinical psychology program.

742R.Forensic. (3)

Acceptance into clinical psychology program.

743R.Clerkship in Clinical Psychology. (1)

Supervised experience in community agencies. Acceptance into clinical psychology program.

745.Clinical Internship. (2)

Full-time training at approved mental health agency. Acceptance into clinical psychology program.

746.Clinical Internship. (2)

Full-time training at approved mental health agency. Acceptance into clinical psychology program.

747.Clinical Internship. (1)

Full-time training at approved mental health agency. Acceptance into clinical psychology program.

748.Clinical Internship. (1)

Full-time training at approved mental health agency. Acceptance into clinical psychology program.

750R.Advanced Topics in Social Psychology. (3)

A critical examination of recent topics and interests within social psychology. PSYCH 650R; instructor's consent.

PSYCHOLOGY

785R.Advanced Topics in Behavioral Neuroscience. (3)

A critical examination of recent topics and interests within behavioral neuroscience.

PSYCH 686R; instructor's consent.

799R.Doctoral Dissertation. (0.5-9)

Concluding research for doctoral program, culminating in final oral examination.

FACULTY

Baldwin, Scott A. *Associate Professor*, PhD, University of Memphis, 2006. Psychotherapy Outcome and Process Research; Quantitative Methodology; Program Evaluation

Bigler, Erin D. *Professor*, PhD, Brigham Young University, 1974. Neuropsychology; Neuroanatomy; Neuroimaging

Birmingham, Wendy *Assistant Professor*, PhD, University of Utah, 2011. Health Psychology; Relationships and Disease Processes; Social Support, Cancer and Screening Behavior; Cardiovascular Disease

Braithwaite, Scott R. *Assistant Professor*, PhD, Florida State University, 2010. Prevention of Marital Dysfunction and the Secondary Consequences that Attend It; The Influence of Close Relationships on Physical and Mental Health; Partner Selection

Brown, Bruce L. *Professor*, PhD, McGill University, Canada, 1969. Statistical and Mathematical Methods and Measurement; Psycholinguistics; Theory and Philosophy

Burlingame, Gary M. *Professor*, PhD, University of Utah, 1983. Group Therapy; Process and Outcome; Outcome Assessment; Measurement/Methodology

Carpenter, Bruce N. *Associate Professor*, PhD, University of Wisconsin, Madison, 1980. Clinical Assessment; Psychopathology; Stress and Coping; Hypersexuality

Flom, Ross *Associate Professor*, PhD, University of Minnesota, 1999. Perceptual and Cognitive Development in Human Infants

Gale, Shawn D. *Associate Professor*, PhD, Brigham Young University, 1994. **Gantt, Edwin E.** *Associate Professor*, PhD, Duquesne University, 1998. Philosophical Foundations of Psychological Science; Theories of Religion and Religious Experience; Theories of Altruism and Empathy; Qualitative and Alternative Research Methods; Critical Examination of Naturalistic and Evolutionary Approaches to Psychology

Hardy, Sam A. *Associate Professor*, PhD, University of Nebraska-Lincoln, 2005. Adolescent and Adult Development; Personality; Morality; Religiosity; Self and Identity; Agency; Theory and Philosophy

Hedges, Dawson W. *Professor*, MD, University of Utah, 1988. Psychiatry; Neuroscience; Electroencephalography

Higley, J. Dee *Professor*, PhD, University of Wisconsin, 1985. Developmental Psychopathology, Psychobiology, and Primate Behavior

Holt-Lunstad, Julianne *Associate Professor*, PhD, University of Utah, 2001. Social Relationships; Stress and Coping; Psychoneuroendocrinology; Psychophysiology; Health Psychology

Hopkins, Ramona O. *Professor*, PhD, University of Utah, 1996. Cognitive Neuroscience and Neurobiological Approaches to Cognition; Brain Imaging; Brain Behavior Relationships Following Anoxia and Brain Injury; Effects of Brain Injury on Emotion; Health Related Quality of Life; and Family Stress Due to Illness

Jensen, Chad D. *Assistant Professor*, PhD, University of Kansas, 2011. Clinical Child and Adolescent Psychology, Pediatric Psychology, Pediatric Behavioral Weight Control

Kirwan, C. Brock *Associate Professor*, PhD, Johns Hopkins University, 2006. Memory; Amnesia; Functional Neuroimaging

Lambert, Michael J. *Professor*, PhD, University of Utah, 1971. Research in Psychotherapy Process and Outcome; Measuring Treatment Outcomes

Larson, Michael J. *Associate Professor*, PhD, University of Florida, 2008. Neuropsychology; Cognitive Neuroscience; Neuroimaging; Cognitive Changes Following Traumatic Brain Injury; Cognitive Processes in Psychopathology such as Obsessive-Compulsive Disorder

Luke, Steven *Assistant Professor*, PhD, University of Illinois, 2011. Language processing; Vision; Reading; Eye Movements; Neural Control and Integration of Cognitive Processes

Lundwall, Rebecca *Assistant Professor*, PhD, Rice University, 2013. Visual Attention Development; Genetics; Gene-by-Environment Interactions; Cognitive Neuroscience

Miller Jr., Harold L. *Professor*, PhD, Harvard University, 1975. Experimental Analysis of Learning and Motivation; Behavioral Economics; Self-control; Evolutionary Psychology; Educational Assessment; Pedagogy; Educational Reform

Nielsen, Stevan Lars *Clinical Professor*, PhD, University of Washington, 1984. Developmental Psychology; Quantitative Methods

Ridge, Robert D. *Associate Professor*, PhD, University of Minnesota, 1993. Media Influences on Anti- and Prosocial Behavior; Interpersonal Interaction; Applied Social Psychology

Slife, Brent *Professor*, PhD, Purdue University, 1981. Conceptual Underpinnings of Personality and Psychotherapy; Relational and Theistic Approaches to Psychology

South, Mikle *Associate Professor*, PhD, University of Utah, 2005. Autism Spectrum Disorders; Social Emotion/Motivation, Functional Neuroimaging, Restricted/Repetitive Behaviors and Interests, Diagnostic Issues

Steffen, Patrick R. *Professor*, PhD, University of Miami, 1998. Clinical Health Psychology; Stress and Development of Disease; Spiritual and Cultural Factors in Health

Steffensen, Scott *Professor*, PhD, University of Utah, 1987. Addiction; Learning/Memory; Anesthesia and Consciousness; Neuroscience

Warren, Jared *Associate Professor*, PhD, University of Kansas, 2003. Clinical Child and Adolescent Psychology; Evaluating Child Psychotherapy Outcomes and Processes

Williams, Richard N. *Professor*, PhD, Purdue University, 1981. Theoretical and Philosophical Foundations of Psychology

Yamawaki, Niwako *Associate Professor*, PhD, University of Utah, 2002. Counseling Psychology; Gender Role and Sexism; Cross-Cultural Studies; Attitude Toward Mental Health; Individualism/Collectivism

PUBLIC MANAGEMENT, ROMNEY INSTITUTE OF

Director: Thompson, Jeff

760 TNRB, Provo, UT 84602-3158
(801) 422-4221
mpa@byu.edu
<http://mpa.byu.edu>

THE PROGRAMS OF STUDY

Administered through the Romney Institute of Public Management, the master of public administration (MPA) program prepares men and women for leadership in the public and nonprofit sectors.

Leadership in this context provides unique opportunities for service to others. The faculty and students of the Romney Institute are dedicated to the philosophy that students should develop excellence in both knowledge and management skills, based on a solid ethical foundation. The success of this philosophy is demonstrated by the wide variety of leadership positions now held by alumni throughout the world in state and local governments, federal agencies, research organizations, business firms, and diverse nonprofit organizations. Graduates are employed in a variety of careers, such as city managers, personnel directors, policy analysts, nonprofit program directors, performance auditors, and finance directors.

Today the public sector is called on to assist in areas that were traditionally the sole domain of profit organizations. Never before has there been a greater need for professionally trained public managers, and never before has there been greater opportunity for dedicated and qualified public managers to provide leadership in shaping the course of human affairs through public institutions and programs.

The Romney Institute offers two programs leading to the MPA degree: full-time and executive. Both are accredited by the NASPAA - The Global Standard in Public Service Education. The full-time program

requires two years; approximately fifty students are admitted each year. The executive program is taught one night a week for three years. Approximately forty students are admitted each year.

Public Administration - Executive Program - MPA

Persons with significant public management experience who desire to pursue the master's degree program while continuing to work full-time are encouraged to apply. All courses in the program are offered in the evening, one night a week for three years at the BYU Salt Lake Center.

The executive MPA program consists of successful completion of 45 semester hours of approved course work. Classes are scheduled in such a way that students take six hours per semester (three hours per term). The executive MPA is a general degree and does not offer specialization in functional areas.

FINANCIAL ASSISTANCE

The Romney Institute of Public Management utilizes the Marriott School's financial aid provisions. Qualified MPA students can receive aid from the following: the Marriott School of Management Scholarship Fund, private scholarship donations, assistantship opportunities, and loan assistance.

Scholarships. The Marriott School of Management offers scholarships to Marriott School students through the college, departments and programs. One application online at marriottschool.byu.edu/aid allows students to apply for all scholarships the Marriott School offers.

Assistantships. Research and teaching assistantships are available for qualified second-year students.

Loans. Several loans are available for Marriott School students:

- Marriott School loans: available to full-time Marriott School day students. Marriott School loans are handled on an individual basis, dependent on financial need and standing within the participating program.
- BYU short-term loans: available for up to the cost of tuition only.
- Federal Stafford loans: subsidized by the U.S. government. Not available for international students.

More information on and applications for these loans are available from the BYU Financial Aid Office, A-41 ASB, (801) 422-4104.

RESOURCES AND OPPORTUNITIES

The N. Eldon Tanner Building. The Tanner Building, which houses the Marriott School of Management, is one of the finest facilities of its kind. The original building, with a dramatic seven-story atrium, was updated with a four-story addition. The addition boasts thirty-nine team study rooms, six large case rooms, the Blue Line Deli, and adds 76,000 square feet to the existing building.

The Marriott School of Management. The Marriott School is recognized as one of the outstanding management schools in the nation. Faculty are actively engaged in research and publication, and they fill leadership positions in a number of national professional organizations. The school has developed innovative educational programs that include internships, executive visitation programs, special student consulting and research projects, and other activities designed to bring management education and training closer to management practice. This is accomplished, in part, through the Marriott School's National Advisory Council.

The National Advisory Council. Consisting of more than 160 prominent business and government executives, the National Advisory Council lends major support to the Marriott School. Students benefit by

interacting with council members in special campus lectures and seminars and by visiting or working with these executives in their respective organizations. Furthermore, the council assists students with placement opportunities, helps develop funding sources for scholarships, and provides professional development for faculty members.

COURSE DESCRIPTION

MPA

519.International Development Policy. (3)

Designing and evaluating policy in international development. Empirical evidence from randomized control trials, best practices in development policy, behavioral economics and models of behavior change, and design thinking. P MGT 612; or ECON 110; or equivalent

520.Finance for Public Administrators. (1.5)

Application of basic time value of money and forecasting methods.

552.Nonprofit Fund Development. (1.5)

The fundamentals of nonprofit fundraising, including how to select and apply appropriate fundraising techniques and how to develop a comprehensive fund development plan.

553.Grant Writing. (1.5)

The practice of grant writing as a key element of a comprehensive fund development plan. Topics include identifying appropriate grants, writing a grant application, and managing the grantor-grantee relationship.

590.Health Services Delivery. (3)

Introductory course to key concepts and understanding of the organization and management of health services delivery.

591R.Health Care Executive Lectures. (0.5)

Top executives share insights about the health care industry and related career opportunities.

599R.Health Care Internship. (1-3)

Designed to give relevant experience to students preparing for careers in health care management.

603.Managerial Accounting and Computer Concepts. (3)

Accounting systems and processes emphasizing use of management control, financial analysis, decision making, performance evaluation. Spreadsheets and database management.

604.Government and Nonprofit Accounting. (1.5)

An introduction to basic fund accounting, statement analysis, and financial reporting practices for governmental and nonprofit organizations.

612.Economic Decision Making for Managers. (3)

Basic microeconomic theory and tools applied to strategic decision making and management strategy.

615.Public Policy Process. (3)

Examines the governance processes employed by societies in adopting public policies. Includes the politics, institutions, norms, and actors involved in agenda-setting, legitimation, and decision-making. Introduces analytical frameworks to explain and evaluate the quality of governance.

619R.Seminar in Economic Analysis. (0.5-3)

Advanced study in economics with variation in topics to meet current needs.

620.Financial Toolkit for Government and Nonprofit Analysts. (1.5)

Time value of money and time-series forecasting methodology and application.

621.Public and Nonprofit Budgeting. (3)

Management of public and nonprofit financial resources: budget allocation, control, and planning.

622.Government Finance. (1.5)

Acquisition of financial resources through income, consumption, and property taxation.

623.Nonprofit Structure and Tax. (1.5)

Introduction to the study of nonprofit organizations, including history, philosophy, organizational structure, government relations, tax rules, and applicable laws.

624.Nonprofit Finance. (1.5)

Study of the financial structure and income sources for nonprofit organizations, and the applicable laws regulating nonprofit finance.

625.Debt Management. (3)

Advanced study of capital markets, debt instruments, bond issues, debt servicing, and financial disclosure requirements.

626.Budgeting and Finance. (3)

Exploring policies and systems to guide the acquisition and management of financial resources for governmental functions.

627.Cash Management and Investments. (3)

Cash-management systems, policies, and processes in the public-sector; banking services and relationships; and the investment of idle funds.

629R.Seminar in Financial Management. (0.5-3)

Advanced study in public-sector financial management and analysis, with variation of topics to address emerging issues and meet current needs.

630.Statistical Analysis. (3)

Introduction to research methods and applied basic statistical procedures including sampling, descriptive statistics, inferential statistics, and linear and multiple regression.

631.Public Program Evaluation. (3)

Principles and methodologies of evaluating programs, measuring performance, and assessing program effectiveness in governmental and nonprofit entities.

632.Quantitative Decision Analysis. (3)

Effective decision making using software decision-analysis tools and applications to important managerial decisions.

633.Advanced Decision Modeling. (3)

Spreadsheet decision analysis tools to provide powerful support for decision making in the public sector.

634.Data Analysis and Forecasting. (3)

Using statistical and smoothing models to facilitate decision making in the public, nonprofit, and private sectors. Applying time series and casual modeling to identify and forecast trend, cyclical, and seasonal patterns in revenue, expenditure, and macroeconomic data.

638.Public Services Management. (3)

Managing operating systems and processes involving direct or indirect interaction with customers, including government and other public services.

640.Human Resource Management. (3)

Current theory and practice of human resource management in the public and not-for-profit sectors.

641.Organizational Behavior. (3)

Personal effectiveness in organizations; increased awareness of interpersonal strengths and weaknesses.

642R.Executive Lectures in Public Management. (0.5-3)**643.Leadership in Public Administration.** (3)

Key aspects of leadership in the public and not-for-profit sectors. Concepts include applied leadership theories, power and politics, conflict, and negotiation.

651A.Nonprofit Organization Management 1. (1.5)

Orienting students to principles of best practice in the management of nonprofit organizations. The course includes topics in nonprofit strategic management, human resource management, and financial management.

651B.Nonprofit Organization Management 2. (1.5)

Application of nonprofit management principles of best practice directly to partner organizations in the community by providing organizational assessments based on the work completed in 651A.
P Mgt 651A.

652.Executive Nonprofit Management. (3)

Introduction to nonprofit organizations, including history, philosophy, organizational structure, government relations, tax rules, and applicable laws. The financial structure and income sources for nonprofit organizations, and the applicable laws regulating nonprofit finance.

657R.Nonprofit Board Practicum. (1.5)

Students serve on the Board of Directors for a local nonprofit.

659R.Grantwell. (1.5)

Project-based course exploring real-world issues in philanthropy. Understanding resource development, strategic funding priorities, applicant assessment, grant evaluation, and grant management through projects with large individual and institutional donors.

662.Communication in Public Administration. (3)

Crucial communication skills for managers and leaders in public and not-for-profit organizations. Emphasis on writing and oral presentations.

671.State and Local Government Law. (3)

Introduction to legal principles involving governmental powers in a federal system, land use, state and local finance, public meetings/ records, contracts, and liability for government actions.

675.Local Government 1: Form of Government and Service Delivery. (3)

Introduction to the dynamic world of local government. Topics include forms of government, political relationships and policy making, and issues of service delivery.

676.Local Government 2: Planning, Land Use, and Growth. (3)

Current issues facing local governments, including planning, land use and zoning, annexation, growth and sprawl, economic development, and other contemporary issues.

682.Ethics for Management. (3)

Ethical theory and its application to managerial issues. Ethical conflict and dilemmas and choosing between conflicting goods.

683.Legal Issues in Public Administration. (3)

Introduction to legal issues affecting public administration, including the legislative and judicial processes, administrative law, and basic constitutional law.

684.Administrative Environment. (3)

Introduction to the process of government and the legal, political, and social environment of public administration.

685.Management Strategy (3)

Developing mission and goals, analyzing environment, and assessing and developing organization capacity.

686.Public Administration Capstone. (3)

Exploration of critical issues in public administration in the context of the theories presented in the MPA program.

689R.Policy Analysis Theory. (0.5-3)

689R.Seminar in Public Management. (0.5-3)

Varied public management topics that address emerging issues and meet current needs.

690R.Public Management Field Study. (1-3)

Faculty-directed applied research and technical assistance projects for public and nonprofit organizations.

691R.Readings and Conference. (0.5-3)

Individualized readings and consultations.

692R.Directed Research. (0.5-3)

Application of research methods relative to managers.

693R.Field Project. (0.5-4)

693R.Practicum. (0.5-4)

Planned application of administrative concepts in a management work situation and analysis of the impact.

FACULTY

Agle, Bradley R. *Professor*, PhD, University of Washington, 1993. Ethics; Leadership

Facer, Rex L. *Associate Professor*, PhD, University of Georgia, 2002. Local Government; Public Budgeting; Leadership

Hart, David W. *Associate Professor*, PhD, State University of New York, Albany, 1997. Ethics; Organizational Theory

Nelson, Ray D. *Associate Professor*, PhD, University of California, Berkeley, 1975. Finance; Quantitative Methods

Owens, Bradley P. *Assistant Professor*, PhD, University of Washington, 2009. Ethics, Organizational Behavior

Silvia, Chris *Assistant Professor*, PhD, Indiana University, 2010. Public Management, Quantitative Methods

Thompson, Jeffry A. *Associate Professor*, PhD, University of Minnesota, 1999. Leadership; Ethics

Turley, Ty *Assistant Professor*, PhD, University of Chicago, 2013. Development Economics, Experimental Economics

Wadsworth, Lori L. *Associate Professor*, PhD, University of Utah, 2003. Human Resource Management; Ethics; Leadership

Witesman, Eva H. *Assistant Professor*, PhD, Indiana University, Bloomington, 2008. Nonprofit Management; Public Program Evaluation; Quantitative Methods

RECREATION MANAGEMENT

Chair: Lundberg, Neil R.
Graduate Coordinator: Widmer, Mark A.

W419 TNRB, Provo, UT 84602-2031
 (801) 422-1287

<http://marriottschool.byu.edu/msrmyl/>

THE PROGRAMS OF STUDY

This program is currently furloughed and not accepting new graduate students

The Department of Recreation Management and Youth Leadership offers a two-year graduate degree: Youth and Family Recreation-MS. Curriculum focuses on issues related to adolescent development, leadership, youth at risk, leisure philosophy, leisure and family theory, and strengthening families through wholesome recreation. The common goal of the program is to develop expertise and expand knowledge in building strong youth and families through recreation.

Students work closely with faculty in building conceptual models and conducting research that is both theoretical and applied in nature. After completing course work, each student writes a thesis that involves conducting a study related to youth and family recreation.

Students completing their Master's Degree in Youth and Family Recreation will:

- Be prepared to pursue further academic work in doctoral or other advanced degree programs.
- Contribute to the body of knowledge in youth and family recreation through peer-reviewed publication in academic journals and presentation in academic symposia.
- Have opportunities to pursue meaningful careers utilizing their Master's degree training.

- Bless the lives of families, church members, and others in our global community as they apply theoretical knowledge, understanding, and insight related to youth, family, and leisure.

Each spring the department accepts new students - who begin their studies the following September. The average student graduates after two years of course work and completing a thesis.

Youth and Family Recreation - MS

Requirements for Degree

Credit hours (33): 27 course work hours, plus 6 thesis hours (RMYL 699R).

- Required courses: MFHD 612, STAT 511, RMYL 601, 610, 611, 612, 613, 699R; 3 hours of committee-approved electives in youth and family graduate-level courses.
- Electives: 3 additional credits upon committee approval.
- Minor (optional): any approved minor.
- Thesis.
- Examinations: oral defense of proposal, oral comprehensive exam and defense of thesis.

FINANCIAL ASSISTANCE

Graduate awards are available in the form of assistantships and scholarships. Occasionally some graduate faculty members are awarded research grants that may include opportunities for additional paid research assistantships for department graduate students.

RESOURCES AND OPPORTUNITIES

Departmental graduate student office space includes desks, storage, wireless internet access, printers, a small library, a refrigerator, and phone.

Learning Resource Center

This center contains eighteen individual study areas for graduate students as well as computer, audio, and video equipment to assist them in their work.

Opportunities: The department has an affiliation with key family and youth recreation programs that offer excellent research opportunities for graduate students.

COURSE DESCRIPTION

RECM

601.Theoretical Foundations of Family Recreation. (3)

Historical development, theoretical basis, and applied techniques of family recreation. Formal acceptance into recreation management graduate program.

603.Readings in Youth and Family Recreation. (3)

Readings from professional literature and current publications. Formal acceptance into recreation management graduate program.

610.Statistical Analysis. (3)

Calculating inferential statistics commonly used in applied settings; making decisions regarding hypotheses; employing advanced statistical methodologies including multivariate techniques, path analysis, factor analysis, structural equations and hierarchical linear models, when appropriate. Writing and interpreting research findings.

611.Philosophy and Social Psychology of Leisure. (3)

Historical and theoretical roots of developmental youth programs that stress preventative approaches. How to develop character, citizenship, moral and physical fitness, and volunteerism; service learning. Graduate status.

RELIGIOUS EDUCATION

612. Issues and Applications in Family Recreation. (3)

Survey of critical issues in family recreation; applying theory to address them.
Graduate status.

613. Graduate Research Seminar. (3)

Research methods and current issues regarding research methodology. Preparing students to write and defend research proposals. Acceptance to a graduate program.

699R. Master's Thesis. (0.5-9)

FACULTY

Duerden, Mat *Assistant Professor*, PhD, Texas A&M, 2009.
Experience Processes; Youth Development; Outdoor Recreation

Freeman, Patti A. *Professor*, PhD, Indiana University, 1993. Leisure Behavior; Family Leisure; Women's Leisure; Outdoor Recreation

Hill, Brian J. *Professor*, PhD, Clemson University, 1994. Family Recreation; Marital Recreation; Tourism

Lundberg, Neil R. *Associate Professor*, PhD, Indiana University, 2006. Therapeutic Recreation; Adaptive and Inclusive Sport; Marital Satisfaction

Taniguchi, Stacy *Associate Professor*, PhD, Brigham Young University, 2004. Outdoor Recreation; Experiential Education; Law and Recreation Law

Ward, Peter J. *Associate Professor*, PhD, University of Utah, 2006. Youth Development and Leadership; Recreation Management

Widmer, Mark A. *Professor*, PhD, University of Utah, 1993. Therapeutic Recreation; Assessment; Adolescence

Zabriskie, Ramon B. *Professor*, PhD, Indiana University, 2000. Therapeutic Recreation; Family Leisure

RELIGIOUS EDUCATION

Dean: Top, Brent *Graduate*

Coordinator: Ball, Terry B.

Chair - Church History and Doctrine:

Bennett, Richard E. **Chair - Ancient**

Scripture: Fronk, Camille

370 JSB, Provo, UT 84602-5690

801-422-3290

<http://religion.byu.edu/>

THE PROGRAMS OF STUDY

The Religious Education MA program is open only to full-time teachers in the LDS Church Seminaries and Institutes System (S&I) who have at least one year of employment in the system.

Religious Education - MA

The Religious Education MA program is open only to full-time teachers in the LDS Church Seminaries and Institutes System (S&I) who have at least one year of employment in the system.

The degree is designed to provide advanced preparation for teaching in the LDS Church Seminaries and Institutes system. The core curriculum focuses primarily on six areas of study: Old Testament, New Testament, Book of Mormon, Doctrine and Covenants, Latter-day Saint history, and the teaching of religion and scripture.

Religious Education admits a maximum of twelve students to the master's program every other academic year. Course work begins summer term. The program is designed to be completed in three years (two for course work and one for the thesis).

Requirements for Degree-Seminaries and Institutes Candidates

- Credit hours (37): minimum 31 course work hours plus 6 thesis hours (699R).

- Required courses: ReLE 500, ReLE 501, ReLE 595, ReLE 610, ReLE 611, ReLE 621, ReLE 624, ReLE 625, ReLE 632, ReLE 640, ReLE 650, ReLE 699R.

- Thesis. The thesis prospectus must be approved by both BYU Religious Education administration and CES administration. Thesis committees must include at least three members selected from the Religious Education graduate faculty or other approved academics.

- Examinations: written and oral examination of course work and oral defense of thesis.

RESOURCES AND OPPORTUNITIES

Religious Studies Center. The dean of Religious Education is also the general director of the Religious Studies Center, which promotes research in ancient studies, the Bible, the Book of Mormon, LDS Church history, the Doctrine and Covenants, the Pearl of Great Price, and world religions.

The center is a supporting and coordinating agency for religion-oriented research throughout the university. Concentrating on research, writing, publication, and other scholarly activities, it is not involved in classroom instruction or degree programs.

The Richard L. Evans Chair of Religious Understanding. The occupants of the Richard L. Evans Chair of Religious Understanding promote understanding among people of different faiths through teaching and other activities. The chair was established to articulate to a broad audience the religious values to which Elder Evans dedicated his life and to promote an enlightening exchange among Latter-day Saints, members of other faiths, and people of good will everywhere.

COURSE DESCRIPTION

REL A

695R.Directed Readings in Ancient Scripture. (0.5-3)

REL C

540R.Special Topics in Church History and Doctrine. (0.5-3)

695R.Directed Readings in Church History and Doctrine. (0.5-3)

Topics include the Doctrine and Covenants, LDS Church history, LDS doctrine, Christian history, Christian theology, world religions, etc. Graduate standing; instructor's consent.

695R.Professional Ethical Studies. (0.5-3)

The principles and practices associated with the ethics of counseling. Graduate standing; instructor's consent.

REL E

500.Educational Philosophy and Values in Religious Education. (2)

Philosophical basis and underlying values in religious education.

501.Scripture Teaching. (2)

Theory, methodology, and issues of scripture-based teaching in religious education.

595.Research Methods in Religious Education. (3)

Methodology in and resources for research in the four areas of focus: Church History and Doctrine, Old Testament, New Testament, and Book of Mormon.

600.Basic Skills in Pastoral Counseling and Chaplain Care Ministry. (3)

Focuses on the basic skills of pastoral counseling for those wishing to be full-time military chaplains. The emphasis is on pastoral skills in a military setting.

600A.Pastoral Counseling Lab. (1)

Introducing chaplain candidates to basic pastoral counseling skills used in the military. Various models of pastoral counseling; how to provide pastoral counseling in a variety of situations common in a military setting.

601.Interfaith Lecture Series. (1)

To develop a deep and abiding appreciation and understanding of religious faiths, doctrines, practices, spiritual sensitivities, rites and rituals, and fundamental belief systems other than Mormonism. Also to foster an understanding and awareness of how other religions and faith-based traditions function in a modern military setting.

602.Ethics, Professional Roles, and Standards for Armed Forces Chaplains. (3)

Orientation of the chaplaincy as a profession, including the study of standards, roles, ethical/legal issues, and the organizational structure of the Armed Forces Chaplaincy. Graduate standing; instructor's consent.

610.Graduate Seminar on the Old Testament. (3)

Topics in the Old Testament emphasizing doctrinal, historical, and cultural background.

611.Graduate Seminar on the New Testament. (3)

Topics in the New Testament emphasizing doctrinal, historical, and cultural background.

621.Graduate Seminar on the Book of Mormon. (3)

Topics in the Book of Mormon focusing on doctrine and the historical background of the text.

624.Doctrine and Covenants Graduate Seminar. (3)

Topics in the Doctrine and Covenants, emphasizing doctrinal and historical background.

625.LDS Church History Graduate Seminar. (3)

Topics in LDS Church history, emphasizing contemporary current issues.

630.World Religions and Security Analysis. (3)

Focuses on how religion influences our national policy and more specifically provides a framework for assessing how religion impacts the military operational environment where chaplains advise commanders.

631.World Religions and Area Analysis. (3)

Focuses on the various Islams (Sunni, Shia, and Sufi) and groups of interest (Hezbollah, al-Qaeda, Taliban, etc.) and how they influence areas of interest (e.g., Middle East).

632.World Religions. (3)

Doctrines, teachings, world views, and practices of the world's great religions, including Christianity, Islam, Judaism, Buddhism, Hinduism, Confucianism, Sikhism, and Bahai.

635.Fundamentals of Religious Studies. (3)

Exploring ideas about the divine; ways in which religious concepts are expressed in writings, rituals, and belief systems across time and among various cultures from the past to the present.

640.History of the Christian Church. (3)

Background and history of Christianity from the first century A.D. to the present.

641.Military Ministry 1: Historical Foundations and Current Practices. (3)

Preparation of new military chaplains; learning the historical foundation of the U.S. Armed Forces Chaplaincy, emphasizing a practical ministry within a theological and spiritual context. Available to prospective chaplains only.

RELIGIOUS EDUCATION

642. Military Ministry 2: Homiletics. (3)

Preparation of new military chaplains; leading worship, preaching, and guiding the teaching ministry within a chapel and operational environment, emphasizing a practical ministry within a theological and spiritual context.
REL E 641; Available to prospective chaplains only.

645. Graduate Seminar in Christian Theological Thought. (3)

Doctrines about God, Christ, the Trinity, salvation, human beings, sin, grace, the Church, sacraments, and Christian hope in comparison with the restored gospel.

650. Doctrinal Contributions of the Restoration. (3)

Doctrinal contributions of the Restoration from Joseph Smith to the present prophets, seers, and revelators; LDS theology and practice.

688R. Clinical Pastoral Education Practicum. (1-6)

Supervised encounters with persons in crisis. Experiencing the interdisciplinary team process of helping persons. Developing skill in interpersonal and interprofessional relationships and a deeper understanding of ministry. Available to prospective chaplains only.

698. Chaplaincy Comprehensive Final Project. (6)

Research project based on an approved topic that has practical ministry application. Committee consent.

699R. Master's Thesis. (0.5-6)

Graduate coordinator's consent.

FACULTY

Alford, Kenneth L. *Associate Professor*, PhD, George Mason University, 2000. Doctrine and Covenants; Family History

Ball, Terry B. *Professor*, PhD, Brigham Young University, 1992. Archeobotany; Old Testament

Baugh, Alexander L. *Professor*, PhD, Brigham Young University, 1996. LDS Church History-Missouri Period, 1831-1839

Belnap, Daniel L. *Associate Professor*, PhD, University of Chicago, 2007. Ancient Near Eastern Studies

Bennett, Richard E. *Professor*, PhD, Wayne State University, 1984. LDS Church History

Blumell, Lincoln H. *Assistant Professor*

Chadwick, Jeffrey R. *Associate Professor*, PhD, University of Utah Middle East Center, 1992. Land of Israel Studies; Biblical Archaeology; New Testament

Cope, Rachel *Assistant Professor*, PhD, Syracuse University, 2009. American Religious History

Dirkmaat, Gerrit J. *Assistant Professor*, PhD, University of Colorado, 2010. American History

Dorius, Guy L. *Associate Professor*, PhD, Brigham Young University, 1994. Family Studies

Esplin, Scott C. *Associate Professor*, PhD, Brigham Young University, 2006. Church History and Doctrine

Freeman, Robert C. *Professor*, JD, Western State University, 1989. Twentieth-Century Church History

Gaskill, Alonzo L. *Associate Professor*, PhD, Trinity Theology Seminary, 2000. Patristics; Symbolism; Catholicism

Goodman, Michael A. *Associate Professor*, PhD, Brigham Young University, 2004. Marriage and Family; Mission Preparation

Hauglid, Brian M. *Associate Professor*, PhD, University of Utah, 1998. Pearl of Great Price; World Religions

Haws, John B. *Assistant Professor*

Hilton, John L. *Associate Professor*, PhD, Brigham Young University, 2010. Book of Mormon

Holzapfel, Richard Neitzel *Associate Professor*, PhD, University of California, Irvine, 1993. Ancient History

Huntington, Ray L. *Professor*, PhD, Brigham Young University, 1995. Sociology- Middle East

Huntsman, Eric D. *Associate Professor*, PhD, University of Pennsylvania, 1997. New Testament Studies; Early Christianity

Jackson, Kent P. *Professor*, PhD, University of Michigan, 1980. Bible and Near Eastern History

Judd, Daniel K. *Professor*, PhD, Brigham Young University, 1987. Religion and Mental Health

Judd, Frank F. *Associate Professor*, PhD, University of North Carolina, Chapel Hill, 2003. New Testament

Largey, Dennis L. *Professor*, EdD, Brigham Young University, 1981. Book of Mormon

Ludlow, Jared W. *Associate Professor*, PhD, University of California, Berkeley, 2000. Book of Mormon; New Testament

Merrill, Byron *Teaching Professor*, JD, University of California, Davis, 1975. Book of Mormon

Minert, Roger P. *Professor*, PhD, Ohio State University, 1991. Book of Mormon; Pearl of Great Price; New Testament

Muhlstein, Kerry M. *Associate Professor*, PhD, University of California, 2003. Old Testament; Pearl of Great Price

Olson, Camille Fronk *Professor*, PhD, Brigham Young University, 1996. Sociology- Middle East

Ostler, Craig J. *Professor*, PhD, Brigham Young University, 1995. Doctrine and Covenants

Pike, Dana M. *Professor*, PhD, University of Pennsylvania, 1990. Near Eastern Studies

Richardson, Matthew O. *Professor*, EdD, Brigham Young University, 1996. LDS Marriage and Family

Seely, David R. *Professor, PhD,*
University of Michigan, 1990.
Near Eastern Studies

Skinner, Andrew C. *Professor, PhD,*
University of Denver, 1986.
Intertestamental Period; Near
Eastern History

Sperry, Kip *Professor, MLS,*
Brigham Young University, 1974.
Genealogy

Strathearn, Gaye *Associate Professor,*
PhD, Claremont Graduate
University, 2004. New Testament
and Christian Origins

Sweat, Anthony R. *Assistant*
Professor, PhD, Utah State
University, 2011. Doctrine and
Covenants

Swift, Charles *Associate Professor,*
PhD, Brigham Young University,
2003. Scripture as Sacred
Literature; Literature as
Christianity

Top, Brent *Professor, PhD, Brigham*
Young University, 1984. LDS
Doctrine

Wayment, Thomas A. *Associate*
Professor, PhD, Claremont
Graduate School, 2000. New
Testament

Whitchurch, David M. *Associate*
Professor, PhD, Brigham Young
University, 1991. New Testament;
Old Testament; Book of Mormon;
History of English Bible; Biblical
Geography

Wilson, Keith J. *Associate Professor,*
PhD, University of Utah, 1995.
Educational Administration

Woodger, Mary Jane *Professor, EdD,*
University of Utah, 1997. LDS
Women's History

Woods, Fred E. *Professor, PhD,*
University of Utah, 1991. Middle
Eastern Studies

RELIGIOUS STUDIES - MILITARY CHAPLAINCY (PROGRAM)

Dean: Top, Brent *Graduate*
Coordinator: Ball, Terry B.
Chair - Church History and Doctrine:
Bennett, Richard E. *Chair - Ancient*
Scripture: Fronk, Camille

370 JSB, Provo, UT 84602-5690
801-422-3290
<http://religion.byu.edu/>

THE PROGRAMS OF STUDY

The master's degree in Religious Studies is open to military chaplain candidates. The master's degree is designed to provide advanced preparation for service as a military chaplain. Emphasis in the core curriculum is placed primarily on the following areas: Old Testament, New Testament, Book of Mormon, Doctrine and Covenants, Latter-day Saint history, world religions, counseling, and clinical pastoral education. The degree provides the student with a sound historical, doctrinal, and methodological foundation. Chaplain candidates will conclude their program with a comprehensive exam using case studies.

Religious Studies - Military Chaplaincy - MA

The Religious Studies - Military Chaplaincy - MA is open only to Latter-day Saint military chaplain candidates and is designed to provide advanced preparation for service as a military chaplain. The core curriculum focuses primarily on the following areas of study: Religious Studies, Old Testament, New Testament, Book of Mormon, Doctrine and Covenants, Doctrines of the Restoration, Armed Forces Chaplaincy History, Christian Theology and History, World Religions and Security/Area Analysis, Pastoral Counseling, Military Ministry, Professional Standards and Ethics and Clinical Pastoral Education. The degree provides

the student with a sound historical, doctrinal, and methodological foundation. Chaplain candidates will conclude their program with a comprehensive oral exam, and a final project.

Requirements for Degree--Chaplain Candidates

Credit hours (90): minimum 84
course work hours plus 6.0 Clinical
Pastoral Education hours.

- Required courses: Rel E 595, Rel E 600, Rel E 600a, Rel E 601, Rel 602, Rel E 610, Rel 611, Rel E 621; Rel E 624, Rel E 625, Rel E 630, Rel E 631, Rel E 635, Rel E 640, Rel E 641, Rel 642, Rel E 650; Rel E 688R, Rel E 695R; Rel E 698.
- Twenty-seven hours in the following areas: Marriage and Family Therapy, Social Work and Counseling Psychology.
- Examination: Final oral comprehensive examination based on military chaplaincy emphasis.
- Final Project: Follows a thesis format with a practical application. Project committees must include three members selected from the Religious Education graduate faculty or other approved academics.

RESOURCES AND OPPORTUNITIES

Religious Studies Center. The dean of Religious Education is also the general director of the Religious Studies Center, which promotes research in ancient studies, the Bible, the Book of Mormon, LDS Church history, the Doctrine and Covenants, the Pearl of Great Price, and world religions.

The center is a supporting and coordinating agency for religion-oriented research throughout the university. Concentrating on research, writing, publication, and other scholarly activities, it is not involved in classroom instruction or degree programs.

RELIGIOUS STUDIES - MILITARY CHAPLAINCY (PROGRAM)

The Richard L. Evans Chair of Religious Understanding. The occupants of the Richard L. Evans Chair of Religious Understanding promote understanding among people of different faiths through teaching and other activities. The chair was established to articulate to a broad audience the religious values to which Elder Evans dedicated his life and to promote an enlightening exchange among Latter-day Saints, members of other faiths, and people of good will everywhere.

COURSE DESCRIPTION

REL A

695R.Directed Readings in Ancient Scripture. (0.5-3)

REL C

540R.Special Topics in Church History and Doctrine. (0.5-3)

695R.Directed Readings in Church History and Doctrine. (0.5-3)

Topics include the Doctrine and Covenants, LDS Church history, LDS doctrine, Christian history, Christian theology, world religions, etc. Graduate standing; instructor's consent.

695R.Professional Ethical Studies. (0.5-3)

The principles and practices associated with the ethics of counseling. Graduate standing; instructor's consent.

REL E

500.Educational Philosophy and Values in Religious Education. (2)

Philosophical basis and underlying values in religious education.

501.Scripture Teaching. (2)

Theory, methodology, and issues of scripture-based teaching in religious education.

595.Research Methods in Religious Education. (3)

Methodology in and resources for research in the four areas of focus: Church History and Doctrine, Old Testament, New Testament, and Book of Mormon.

600.Basic Skills in Pastoral Counseling and Chaplain Care Ministry. (3)

Focuses on the basic skills of pastoral counseling for those wishing to be full-time military chaplains. The emphasis is on pastoral skills in a military setting.

600A.Pastoral Counseling Lab. (1)

Introducing chaplain candidates to basic pastoral counseling skills used in the military. Various models of pastoral counseling; how to provide pastoral counseling in a variety of situations common in a military setting.

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SOCIAL WORK

Olson, Camille Fronk *Professor, PhD,*
Brigham Young University, 1996.
Sociology- Middle East

Ostler, Craig J. *Professor, PhD,*
Brigham Young University, 1995.
Doctrine and Covenants

Pike, Dana M. *Professor, PhD,*
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Near Eastern Studies

Richardson, Matthew O. *Professor,*
EdD, Brigham Young University,
1996. LDS Marriage and Family

Seely, David R. *Professor, PhD,*
University of Michigan, 1990.
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Skinner, Andrew C. *Professor, PhD,*
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PhD, Brigham Young University,
2003. Scripture as Sacred
Literature; Literature as
Christianity

Top, Brent *Professor, PhD, Brigham
Young University, 1984. LDS
Doctrine*

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Geography*

Wilson, Keith J. *Associate Professor,*
PhD, University of Utah, 1995.
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Woodger, Mary Jane *Professor, EdD,*
University of Utah, 1997. LDS
Women's History

Woods, Fred E. *Professor, PhD,*
University of Utah, 1991. Middle
Eastern Studies

SOCIAL WORK

Director and Graduate Coordinator:
Limb, Gordon E.

Field Education Director: Sheffield,
Wendy

2190 JFSB, Provo, UT 84602-6709
(801) 422-3282
msw@byu.edu
<http://socialwork.byu.edu>

THE PROGRAMS OF STUDY

*The Master of Social Work program
at Brigham Young University is
accredited by the Council on Social Work
Education.*

The mission of the School of Social Work at Brigham Young University is to support the overall mission of BYU and the Church of Jesus Christ of Latter-day Saints by generating new knowledge and by educating and training students to use the appropriate knowledge, values and skills of the social work profession to serve children and families within their environment and the context of their specific cultures.

Social Work - MSW

One graduate degree is offered in the School of Social Work: Social Work - MSW. The concentration of curriculum focuses on preparation for **clinical practice** and **research** with families and children. The School of Social Work MSW curriculum is focused on preparing students to work with families and children, through one of two emphases: Clinical and Research

- **Clinical Emphasis:** Approximately 33-35 students will be admitted to the clinical emphasis each year. Students who apply to this emphasis will become practitioners or clinicians with strong direct clinical practice skills. Alumni from this emphasis work in mental health and other direct practice settings, go on to receive LCSW licensure, and work toward becoming agency directors and administrators of social work organizations.

- **Research Emphasis:** Approximately 5-7 students will be admitted to the research emphasis each year. Students who apply to this emphasis are expected to go on for advanced training in top social work PhD programs. Research emphasis students, like those in the clinical emphasis, will receive strong clinical training and, in preparation for PhD level studies, they will 1) take advanced research courses outside of social work as part of their elective requirements (instead of clinical electives), and 2) submit their research project for professional publication. Alumni from this emphasis will go on to become university professors, work in a research or policy arena, or receive advanced clinical training.

Requirements for Degree

Clinical Emphasis

- Students entering *without* an undergraduate social work degree (BSW) - Credit Hours: 67 (60 major and 7 elective hours)
- Students entering *with* an undergraduate social work degree (BSW) - Credit Hours: 62 (54 major and 8 elective hours)
- All students are required to complete a Master's Research Project.

Research Emphasis

- Students entering *without* an undergraduate social work degree (BSW) - Credit hours: 67 (60 major and 7 research elective hours)
- Students entering *with* an undergraduate social work degree (BSW) - Credit hours: 62 (54 major and 8 research elective hours)
- All students are required to complete a Master's Research Project.

For a more detailed description of the graduate program requirements, see <http://socialwork.byu.edu>.

FINANCIAL ASSISTANCE

The BYU School of Social Work offers the following financial aid opportunities: Full- and partial-tuition scholarships, paid research assistant positions, and internships paid by community agencies. Applicants should apply for admission and financial aid concurrently. Notifications of financial aid will be included in the letter of acceptance. Typically, MSW students are offered a financial aid package between \$10,000-\$20,000.

RESOURCES AND OPPORTUNITIES

The School of Social Work utilizes the

Comprehensive Clinic, an interdisciplinary training and research facility. The facility houses state-of-the-art video and computer equipment, as well as a staff of skilled technicians and staff to support graduate student and faculty research.

Faculty research interests currently include: American Indian child welfare; child welfare; divorce; health care; immigrant families; marriage and families; mental health; mood disorders; poverty; remarriage; school social work; spirituality; substance abuse; women and gender.

Certification and Licensure: MSW students can take courses that lead to a Gerontology certificate (Soc W 581), and School Social Work licensure (Soc W 580).

For a more detailed description of the graduate program requirements, see <http://socialwork.byu.edu>.

COURSE DESCRIPTION

SOC W

570.Crisis Intervention. (3)

Assessment and intervention in crisis situations with clients.

580.Social Work in the School Setting. (3)

Overview of knowledge and skills essential to the practice of social work in educational settings; emphasizes practical interventions when working with student/family/teacher/community resources.

581.Social Services for the Aging. (3)

Process and impact of social service delivery systems on the aged.

585.Global Issues of Children at Risk. (3)

Analyzing major challenges facing children and their families globally, including poverty, malnutrition, poor health care, gender-based discrimination, child labor and sexual exploitation, AIDS orphans, child soldiers, and refugees.

595R.Directed Readings. (0.5-3)

Instructor's consent.

602.Statistical and Data Analysis in Social Work Research. (3)

Analyzing data using commonly used computer methods and interpreting major quantitative and qualitative methods in social work, including regression and multivariate data analysis methods.

SOCIAL WORK

603. Research Methods in Social Work. (3)

Applying quantitative and qualitative social work research. Philosophy of social science, problem formulation, philosophical and epistemological foundations, research designs, ethics, sampling, and data collection methods.

604. Advanced Statistics and Data Analysis in Social Work Research. (3)

Commonly used statistical analyses based on the linear regression model; useful with data or analyses violating one or more assumptions of the OLS regression model. Improved modeling of mediating relationships (SEM), using clustered data, longitudinal data, and issues of selection.

605. Advanced Research Methods in Social Work. (3)

A survey in advanced research methodologies utilized to produce high-quality research in social work and other social sciences. A hands-on methodological training experience focusing on discussions of methodological approaches and designs, real research questions, and empirical papers.

611. Clinical Practicum. (3)

Client therapy session and clinical supervision in the BYU Comprehensive Clinic, including video taping of student therapy sessions
MSW students only.

614R. Integrative Field Seminar 1. (1-2)

Classroom seminar to examine relationship between theory and practice as it relates to the field experience at the foundational level. Concurrent with Soc W 654R; first-year field placement; MSW students only.

615R. Integrative Field Seminar 2. (1)

Classroom seminar to examine relationship between theory and practice as it relates to the field experience at an advanced level. Concurrent with Soc W 655R; second-year field placement; MSW students only.

620. Human Behavior and Social Environment. (3)

Persons in their social environment as individuals, members of families, other groups, organizations, and communities. Cultural, social, psychological, biological, spiritual, and physical forces.
MSW students only, or instructor's consent.

622. Psychopathology. (3)

Etiology and symptoms of dysfunctional behavior and their effects on the individual, family, and community.
MSW students only, or instructor's consent.

624. Marriage and Family Therapy. (3)

Various models of marriage and family treatment; appropriate intervention skills.
MSW students only, or instructor's consent.

630. Social Welfare Policy. (3)

Analyzing and changing social policies and programs.
MSW students only, or instructor's consent.

631. Family Policy and Law. (3)

The law relative to formation, functioning, and dissolution of families and delivery of social services to them.

654R. Field Internship 1. (1-4)

Internship in social service agencies to examine relationship between theory and practice. Concurrent with Soc W 614R; first-year field placement; MSW students only.

655R. Field Internship 2. (1-2)

Internship in social service agencies to examine relationship between theory and practice. Concurrent with Soc W 615; second-year field placement; MSW students only.

660. Direct Practice Skills. (3)

Foundation course for graduate-level clinical social work practice with individuals and groups including an overview of the various social work processes within the framework of commonly used models of both individual and group psychotherapy.
MSW students only.

661. Models of Psychotherapy. (3)

Building on skills acquired in SocW 660; specific and predominate psychotherapy models and approaches applied to common diagnoses and clinical populations.
MSW students only.

662. Group Work Theory. (3)

Structure, function, dynamics, and development of small groups, emphasizing group models and group theory.
Major status; concurrent enrollment in Soc W 620 or bachelor of social work.

663. Advanced Group Work. (3)

An integrated classroom experience, linking theory and practice and incorporating social work values and ethics, critical thinking, and social work practice skills (engagement, assessment, intervention, and evaluation techniques) within various contexts.
MSW students only.

664. Community Organization. (3)

Process of social interaction and method to maintain adjustment between community resources and needs of members; helping diverse population and people-at-risk to deal more effectively, and bring about change in community.
MSW students only, or instructor's consent.

665.Organizational Governance and Executive Leadership in Human Services Administration. (3)

Key managerial functions of complex organizations and institutions; administrative theory and selected management techniques.
MSW students only, or instructor's consent.

666.Advanced Practice Skills. (3)

Linking biopsychosocial assessment to selective intervention strategies. Major diagnoses will be considered in linking assessment to theory and intervention skills.
SOC W 661; MSW students only.

667.Intervention Methods with Children and Adolescents. (3)

Use of intervention methods regarding child and adolescent problems in addition to understanding reciprocal impact of significant systems, i.e., school, family, peers, church, health, socioeconomic status.
SOC W 661; MSW students only.

669.Advanced Clinical Practice. (3)

An additional practice course directed to polishing clinical practice skills for a seamless movement into community clinical practice agency settings. The focus will be on addictions and other specialized clinical topics.
MSW students only.

670R.Special Topics in Advanced Clinical Practice. (1-3)

Various topics offered as need or interest arises.
Instructor's consent.

671.Play Therapy. (3)

History and development of play therapy; model for practical application and child-centered theoretical approaches; primary emphasis on clinical child-centered play therapy.
MSW students only, or instructor's consent.

674.Human Sexuality and Social Work Practice. (3)

Overview of human sexuality. Introduction to treatment of sexual problems and disorders.
SocW 624 or instructor's consent.

675.Substance Abuse Treatment. (3)

Full spectrum of substance abuse interventions: intervening with selected special populations, such as those who have been sexually abused.
MSW students only, or instructor's consent.

676.Spirituality in Social Work. (2)

Interface of religious and social work values, attitudes, and principles.
Instructor's consent.

678.Marriage and Family Practice. (2)

Methods of assessment, planning intervention, and evaluation and termination with marital dyads, family, and community.

680R.Pharmacology. (2)

Introduction to foundation of drug interactions from both prescription and natural herb remedies; survival, morbidity, quality of life, neurohormonal changes, symptoms, treatment indications.

680R.Selected Fields of Practice. (1-3)

Current problems and treatments in social work practice.
Instructor's consent.

681.Comparative International Social Welfare Policy. (3)

Social welfare policies of various countries. Solving global social problems within framework of human rights directives.
MSW students only, or instructor's consent.

697R.Independent Research. (1-3)

Writing for professional publication. Faculty-supervised research for organizing, writing, and submitting the master's research project for publication.
Instructor's consent.

698R.Master's Research Project. (1-3)

Applying research and statistical methods to evaluative, experimental, and survey studies in social work. Research project of publishable quality required.
MSW students only.

FACULTY

Dennis, Cory *Assistant Professor*

Limb, Gordon E. *Associate Professor*, PhD, University of California, Berkeley, 2000. American Indian Child Welfare; Social Work Education; Spirituality

Roby, Jini L. *Professor*, JD, MSW, Brigham Young University, 1990. Social Work and Family Law; Social Welfare Policy and Programs

Shafer, Kevin *Assistant Professor*, PhD, The Ohio State University, 2009. Divorce and Repartnering; Stepfamilies; Fragile and at-risk Families

SOCIOLOGY

Chair: Miller, Richard B.
Graduate Coordinator: Dufur, Mikaela

2008 JFSB, Provo, UT 84602-5547
 (801) 422-3393
margaret_mccabe@byu.edu
<http://sociology.byu.edu>

THE PROGRAMS OF STUDY

The aims of the graduate program in sociology are to educate students in the principles, theories, and methods of sociology; train them in an area of specialization; and create skilled professional teachers and researchers. Faculty in the department are active in producing both quality research and instruction. Graduate students have many opportunities for funding and involvement in research activities. Graduate students may also have opportunities to obtain experience in teaching undergraduate courses (as needed to support the department's course offerings) during the second year of their program.

The Department of Sociology currently offers an MS degree.

The Sociology Department admits an average of eight to twelve students to the master's program each fall semester. Full-time students making good progress in the program are expected to finish a master's degree in two years.

Sociology - MS

The master's degree prepares students for two career paths: (1) doctoral work beyond the master's degree and (2) professional careers at the master's level as teachers and researchers.

Requirements for Degree

Credit hours (minimum 35): 29 course hours, including at least 23 hours of formal course work in sociology, plus 6 hours of thesis credits (Soc 699R). Only course work with a grade of B- or better is acceptable.

- Required courses: Soc 600, 604, 605, 610; and for first-year graduate students 598R in fall and winter; minimum 15 additional hours of graduate sociology course work; demonstration of competence in sociological theory, research methods, and statistics.
- Thesis.
- Examination: oral defense of thesis.

FINANCIAL ASSISTANCE

The Department of Sociology offers graduate teaching and research assistantships. These are semester-long appointments with an expectation of twenty hours of work per week. Renewal of an assistantship is based on making satisfactory progress in the graduate program each semester. Financial assistance is also available through other agencies in the university.

RESOURCES AND OPPORTUNITIES

The Department of Sociology utilizes as valuable resources the School of Family Life, the survey computer lab, the college computing lab, graduate fellowships, and the Kennedy Center for International Studies. Funding and research opportunities can be sought through the Kennedy Center, Graduate Studies, and other campus and disciplinary entities, as well as through the department.

Faculty research interests cover a broad spectrum of social science research. However, the make-up of the department faculty generates most research in the following areas: family, stratification, social organization and change, ethnicity, community and delinquency.

For a more detailed description of the graduate program requirements, send for a copy of the department's bulletin or see our Web page at <http://sociology.byu.edu>.

COURSE DESCRIPTION

SOC

525.Sociology of Religion. (3)

Influences of social factors in the development of various religious systems.
 Soc 111, 325, or instructor's consent.

528.Sociology of Rural Communities. (3)

Review and critique of major theoretical and methodological approaches to the study of community, with a focus on rural communities.
 Soc 311, 370, or instructor's consent.

590R.Special Topics in Sociology. (0.5-3)

Course content varies from year to year.
 Instructor's consent.

595R.Directed Readings. (0.5-3)

Individualized reading program supervised by faculty member.

598R.Pro-Seminar. (1)

Current developments in sociology including research, proposals, professional meetings, teaching, and finding a job.

600.Graduate Research Methods. (3)

Introduction to philosophy of science, emphasizing research design and development of thesis prospectus, including strengths, limitations, and constraints of various methodologies.
 SFL 290 or Soc 300 or equivalent.

604.(Soc-MFHD) Ethnographic Research Techniques. (3)

Rationale, methods, and limitations of qualitative research; includes participant observation and hermeneutic skills.
 SOC 600

605. Multiple Regression Analysis. (3)

Ordinary least squares and logistic regression techniques. Data acquisition, management, analysis, and report writing.
Soc 306 or instructor's consent.

606. Intermediate Statistics. (3)

Path analysis, factor analysis, and event history techniques.
Soc 306, 605; or equivalents.

608. Seminar in Survey Research and Sociological Measurement. (3)

Survey research techniques in the behavioral sciences, emphasizing research and sampling designs. Measurement techniques, emphasizing consequences of measurement decisions.
SOC 600 & SOC 605; or SOC 600 & SOC 606

610. Classical Social Theory. (3)

Philosophical foundations of sociological theory; works of major classical theorists such as Marx, Weber, Durkheim, Simmel, Mead, DuBois, Addams, and Parsons.
Soc 310, 311; or equivalents.

611. Contemporary Sociological Theory. (3)

Recent developments in sociological theory. In-depth analysis of structure and assumptions of contemporary sociological theories.
Soc 310, 311, 610; or equivalents.

620. Theory and Research in Social Organization. (3)

Graduate survey of the field of social organization and the core subfields therein.
Admission to graduate sociology programs; others admitted by instructor's consent.

621. Complex Organizations. (3)

Theoretical approaches and empirical studies of organizations, their structures, processes, and problems; studies of industrial organizations, universities, hospitals, etc.
Instructor's consent.

622. Social Stratification. (3)

Status, class, and power systems in various societies.
Soc 111 or equivalent.

623. Seminar in Race and Ethnic Relations. (3)

Major theories of race-ethnic relations; critical issues in the field.

645. Seminar on Population Analysis. (3)

Availability, use, and interpretation of population data for local, state, and national areas applied to planning and evaluation.
Soc 306 or equivalent.

650. Advanced Social Psychology. (3)

Processes of social influence, emphasizing theory and research testing. Basic principles of social behavior.

681R. Seminar in Deviance, Crime, and Corrections. (3)

In-depth analysis of current issues in the field. Tailored to student interests.
Soc 380, 381 or 383, or instructor's consent.

692R. (Soc-MFHD) Seminar in Family Relationships. (0.5-3)

Theory and research in topical areas of family study (topics presented on alternate years).

697R. Directed Research. (0.5-3)

699R. Master's Thesis. (0.5-6)

706R. (Soc-MFHD) Advanced Statistical Methods. (3)

Topics include advanced structural equations and hierarchical linear models, or panel data techniques and generalized linear models.
Soc 605 or MFHD 605 or Psych 502.

799R. Doctoral Dissertation. (0.5-9)

FACULTY

Call, Vaughn R. A. *Professor*, PhD, Washington State University, 1977. Family Life Course; Research Methods; Aging; Education

Child, Curtis *Assistant Professor*, PhD, Indiana University at Bloomington, 2011. Organizations; Economic Sociology; Political Sociology; Social Movements; Civil Society and the Nonprofit Sector; Research Methods

Cope, Michael R. *Assistant Professor*, PhD

Dahlin, Eric *Assistant Professor*, PhD, University of Minnesota, 2010. Organization Innovation, Institutional Change, Creativity, Social Networks, Work-Family Conflict

Dufur, Mikaela J. *Associate Professor*, PhD, Ohio State University, 2000. Stratification; Family; Education; Children and Youth; Sport

Erickson, Lance D. *Associate Professor*, PhD, University of North Carolina, Chapel Hill, 2005. Life Course; Family; Adolescence

Forste, Renata *Professor*, PhD, University of Chicago, 1992. Demography; Family; Child and Adolescent Health

Gibbs, Benjamin *Assistant Professor*, PhD, Ohio State University, 2009. Social Stratification; Social Mobility, Sociology of Education, Class/Race/Gender

Heaton, Tim B. *Professor*, PhD, University of Wisconsin, Madison, 1979. Demography

Hoffmann, John P. *Professor*, PhD, State University of New York, Albany, 1991. Criminology; Statistics; Sociology of Religion

Jacobson, Cardell K. *Professor*, PhD, University of North Carolina, Chapel Hill, 1971. Social Psychology; American Race/Ethnic Relations; Sociology of Religion

SPANISH AND PORTUGUESE

Knapp, Stan J. *Associate Professor*, PhD, Florida State University, 1996. Family; Social Theory

Phillips, Kristie J. R. *Assistant Professor*, PhD, Vanderbilt University, 2005. Sociology of Education (emphasizing urban education); Education Policy; School Choice and Geographic Distribution of Social Resources

Rees, Carter *Assistant Professor*, PhD, University of Albany, State University of New York, 2011. Juvenile Delinquency; Social Networks; Social Influence; Statistical Methodology

Rugh, Jacob S. *Assistant Professor*, PhD, Princeton University, 2012. Race and Ethnicity; Segregation; Stratification; Urban Sociology; Immigration

Sanders, Scott R. *Assistant Professor*, PhD, Cornell University, 2013. Demography; Poverty; Health Care

SPANISH AND PORTUGUESE

Chair: Laraway, David
Graduate Coordinator: Williams, Lynn
Associate Graduate Coordinator: Larson, Erik Matthew

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THE PROGRAMS OF STUDY

Two degrees are offered through the Department of Spanish and Portuguese: Portuguese-MA and Spanish-MA.

Most students who complete a master's degree in the department either seek jobs in secondary education or continue their studies on the PhD level. Some have located positions with government agencies or in the business sector. Each year about fifteen students are admitted to the program.

The program is designed for a student to complete the degree in twenty-four months of intensive work.

Spanish - MA

Students must choose one of the following areas of specialization before applying to the program: Hispanic Literatures, Hispanic Linguistics, and Spanish Pedagogy.

Requirements for Hispanic Literatures Specialization:

- Credit hours: 33.
- Core required courses: 21 hours, including Span 601B, three 1-credit mini-courses (2 in literature and one in linguistics, pedagogy, or literature), and five courses in Peninsular or Spanish American literature. At least two courses must be taken from each of the two regional emphases. (Span 638 and 602 may not be used to fulfill this minimum regional requirement.)

- Electives (6 hours): 3 hours in Hispanic linguistics and 3 hours in Spanish pedagogy. (Span 673R does not count toward this requirement.)
- Thesis or two-paper option: 6 credit hours of Span 699R, plus an oral defense.
- Examinations: comprehensive, culminating written exam in specialty.
- Completion of three semesters (college level or equivalent) of a second foreign language other than English in addition to language of specialization.
- Teaching requirement: teach at least one Spanish language class (100/200 level).

Requirements for Hispanic Linguistics Specialization:

- Credit hours: 33.
- Core required courses: 21 hours, including Span 601A, 625, and 626, three 1-credit mini-courses (2 in linguistics and one in literature or pedagogy), and three courses in Hispanic linguistics.
- Electives (6 hours): 3 hours in Peninsular or Spanish American literature and 3 hours in Spanish pedagogy. (Span 673R does not count toward this requirement.)
- Thesis or two-paper option: 6 credit hours of Span 699R, plus an oral defense.
- Examinations: comprehensive, culminating, written exam in specialty.
- Completion of three semesters (college level or equivalent) of a second foreign language other than English in addition to language of specialization.
- Teaching requirement: teach at least one Spanish language class (100/200 level).

Requirements for Spanish Pedagogy Specialization:

- Credit hours: 33.
- Core required courses: 21 hours, Span 601C, 671, 676; three courses in Spanish Pedagogy; and three 1-credit mini-courses (2 in pedagogy and one in literature, linguistics, or pedagogy). (Span 673R does not count toward the core requirement).
- Electives (6 hours): 3 hours in Hispanic linguistics and 3 hours in Peninsular or Spanish American literature.
- Thesis or project option: 6 credit hours of Span 698R or 699R, plus an oral defense.
- Examinations: comprehensive, culminating written exam in specialty.
- Completion of three semesters (college level or equivalent) of a second foreign language other than English in addition to language of specialization.
- Teaching requirement: teach at least one Spanish language class (100/200 level).

FINANCIAL ASSISTANCE

Students may receive a position as a student instructor depending on departmental needs and on their qualifications. All potential student instructors must have completed a 3-hour methodology course, and they must participate in an intensive workshop held during the week previous to the commencement of fall classes. Continuing employment and the number of sections assigned to candidates each semester depend on department needs and on the students' performance as instructors and on their own academic progress. Additionally, most students receive partial scholarship grants (generally 65-85% of required courses) to help cover tuition expenses.

RESOURCES AND OPPORTUNITIES

The Department of Spanish and Portuguese utilizes the Office of Digital Humanities for world-class computer-assisted language instruction. Students may choose to participate in a variety of Study Abroad programs conducted by the department in Europe and Latin America.

Faculty research interests currently include:

- Acquisition of Spanish as a second language (language teaching methodology, teacher training, oral proficiency testing, computer-administered placement and speaking tests)
- Hispanic literature (Spanish medieval literature, Spanish Golden Age literature, eighteenth- and nineteenth-century Spanish literature, Spanish American women writers, Spanish women writers, Hispanic film, Spanish American poetry, modern Spanish poetry, literature and philosophy, contemporary Hispanic theatre, Mexican prose, metafiction and metatheatre, Hispanic romanticism, Spanish realist narrative, intersemiotic analogies, literature and science, Spanish cultural studies)
- Portuguese literature (classical Portuguese literature, Brazilian literature)
- Hispanic linguistics (Caribbean sociolinguistics, phonetic spectrography; Romance semantics, Hispanic paleography, mood in the nominal clause, language contact, bilingualism)

COURSE DESCRIPTION**PORT****520.Advanced Portuguese Grammar. (3)**

Applying contemporary grammatical concepts to problems in Portuguese grammar. Port 326 or 329.

521.Romance Philology. (3)

Comparative study of evolution of Latin into modern romance languages. Port 326 or 329.

522.History of the Portuguese Language. (3)

Linguistic sources that contributed to formation of Portuguese. Port 326 or 329.

529R.Special Topics in Portuguese Linguistics. (3)

Topics from semantics to dialectology to sociolinguistics. Port 326 or 329, or instructor's approval.

599R.Academic Internship: Portuguese Internship. (1-3)

Port 321; instructor's consent.

601A.Portuguese Linguistics and Research Methodology. (3)

Basic research fields in linguistics (i.e., phonology, philology, syntax, psycholinguistics), how research differs in each area, and specific theoretical issues associated with each. Bibliographical and field research methods and techniques of reporting findings.

601B.Literary Theory and Research Methodology. (3)

Introduction to literary theory, emphasizing major theoretical movements and strategies of literary interpretation. Bibliographical techniques, research methodology, and issues pertaining to the profession.

SPANISH AND PORTUGUESE

601C.Portuguese Language Teaching Research Procedures. (3)

625.Portuguese Morphosyntax. (3)

Linguistic study of morphological and syntactic structure of Portuguese.

626.Portuguese Phonetics and Phonology. (3)

Systematic study of articulatory and acoustic Portuguese phonetics and of structural and generative approaches to phonological description of Portuguese. Port 326 or equivalent.

638.Luso-Brazilian Cinema. (4)

Introduction to the study of film; background in appreciating the best of motion picture art in Brazil, Portugal, and other Lusophone countries. Port 321 & 322 or equivalents.

639R.Luso-Brazilian Theatre Production. (3)

Theory and practice of dramatic performance. Includes participation in a play to be performed during semester.

642.Camoes. (3)

647.Fernando Pessoa and Portuguese Literature. (3)

Seminar on one of the major European poets of the twentieth century and the only Portuguese poet on a par with Camões.

649R.Seminar in Portuguese Literature. (3)

652.Machado de Assis. (3)

Port 441, 451; or equivalents.

653.Twentieth-Century Brazilian Literature. (3)

Port 441, 451; or equivalents.

659R.Seminar in Brazilian Literature. (3)

661R.African Literature in Portuguese. (3)

Modern authors from the five African nations whose official language is Portuguese: Angola Cabo Verde, Guine Bissau, Mozambique, and Sao Tome Pricipe. Authors include Jose Craveirinha, Mia Couto, Noemia de Sousa, Jose Tenreiro, Castro Soromenho, Luandino Vieira, Pepetala, Baltasar Lopes, among others.

662R.Literature of the Lusophone World. (3)

Authors from the eight nations whose official language is Portuguese, plus former colonies and regions of important Portuguese influence. Included are Luso-American and Azorean writers, as well as authors from East Timor (formerly Indonesia), Goa (India), and Macau (China).

673R.Directed Teaching of Portuguese. (1-3)

Supervised, practical experience in teaching Portuguese at the college level. Teaching assistantship in department.

674.Teaching Lusophone Cultures. (3)

Methods of researching and teaching Lusophone cultures.

679R.Seminar in Teaching Portuguese. (3)

Topics vary. In-depth discussion about issues relating to language teaching and research.

680R.Directed Research in Portuguese. (1-3)

Under direction of faculty member, designing and conducting research project that covers material not normally presented in regular course work. Research paper required. Written proposal subject to departmental approval.

698R.Master's Project. (1-6)

699R.Master's Thesis. (1-9)

SPAN

520.Problems in Spanish Grammar. (3)

Application of contemporary grammatical concepts to problems in Spanish grammar. SPAN 325; or SPAN 326; or SPAN 329

521.Romance Philology. (3)

Comparative study of the evolution of Latin into modern Romance languages. SPAN 325; or SPAN 326; or SPAN 329

522.History of the Spanish Language. (3)

Linguistic sources that contributed to formation of the Spanish language. SPAN 325; or SPAN 326; or SPAN 329

529R.Special Topics in Spanish Linguistics. (3)

Topics include semantics, dialectology, and sociolinguistics. SPAN 325; or SPAN 326; or SPAN 329

577.Spanish Language Teaching Procedures. (3)

Mastery of skills specific to foreign language instruction. Lectures, demonstrations, practical experience. For public school teachers.

599R.Academic Internship: Spanish Internship. (0.5-3) SPAN 321

601A.Hispanic Linguistics and Research Methodology. (3)

Basic research fields in linguistics (i.e., phonology, philology, syntax, psycholinguistics), how research differs in each area, and specific theoretical issues associated with each. Bibliographical and field research methods and techniques of reporting findings.

601B.Literary Theory and Research Methodology. (3)

Introduction to literary theory, emphasizing major theoretical movements and strategies of literary interpretation. Bibliographical techniques, research methodology, and issues pertaining to the profession.

601C. Research Designs in Hispanic Language Teaching. (3)

Designing and evaluating empirical research studies in foreign language learning and teaching methodology. Bibliographical techniques and methods of reporting findings.

602R. Special Topics in Contemporary Literary Theory. (3)

Topics, figures, themes, and movements in contemporary theory as they relate to Hispanic literatures, cultures, and film. Instructor's consent.

622. Hispanic Dialectology. (3)

Overview of the varieties of spoken Spanish.

625. Spanish Morphosyntax. (3)

Linguistic study of morphological and syntactic structure of Spanish.

626. Spanish Phonetics and Phonology (3)

Systematic study of articulatory and acoustic Spanish phonetics and of structural and generative approaches to phonological description of Spanish. Span 326 or instructor's consent.

629R. Seminar in Spanish Linguistics. (3)**638. Hispanic Cinema. (3)**

Introduction to study of film; background in appreciating best of motion picture art in Spain and Spanish America. Span 339 or equivalent.

639R. Hispanic Theatre Production. (3)

Theory and practice of dramatic performance. Includes participation in play to be performed during semester. Director's consent.

640. Medieval Spanish Literature. (3)

Spanish Literature from *El Cantar de Mio Cid* (1140) through *La Celestina* (1499). Span 441 or equivalent.

643R. Golden Age Literature. (3)

Sixteenth- and seventeenth-century Spanish literature. Span 441 or equivalent.

644. Don Quijote. (3)

In-depth study of Cervantes's *El ingenioso hidalgo don Quijote de la Mancha*. Span 441 or equivalent.

646R. Nineteenth-Century Spanish Literature. (3)

Romanticism (1770s through 1870s) and/or the novels of Benito Perez Galdos and his contemporaries. Span 441 or equivalent.

648R. Twentieth-Century Spanish Literature. (3)

Genre (twentieth-century novel, drama, or poetry) or particular school (Generation of 1898, Generation of 1927, etc.) Span 441 or equivalent.

649R. Seminar in Spanish Literature. (3)**650R. Early Spanish American Literature. (3)**

Indigenous literature (Maya, Nahuatl, etc.) and other texts written in Spanish colonial America through eighteenth century. Span 451 or equivalent.

654R. The Spanish American Novel. (3)

Selected Spanish American novelists such as Juan Rulfo, Gabriel Garcia Marquez, Alejo Carpentier, Mario Vargas Llosa, etc. Span 451 or equivalent.

655R. Spanish American Poetry. (3)

Selected Spanish American poets, movements, and national traditions. Span 451 or equivalent.

656R. Spanish American Drama. (3)

Twentieth-century theatre from Spanish America and Brazil. Span 451 or equivalent.

658R. The Hispanic-American Short Story (3)

Introduction and development of an important literary genre in Spanish America, including works of Jorge Luis Borges, Julio Cortazar, Juan Rulfo, Gabriel Garcia Marquez, and others. Span 451 or equivalent.

659R. Seminar in Spanish American Literature. (3)**661. Spanish-Speaking American (Mexican-American) Literature. (3)**

Spanish-English literature of Mexican-Americans within the United States. Span 451 or instructor's consent.

671. Principles of Foreign Language Learning and Teaching. (3)

Basic theories and principles of language learning and teaching. History, current research, practices, trends, and issues.

672. Media and Technology in Foreign Language Instruction. (3)

Applying modern technology and instructional media in teaching foreign languages.

673R. Directed Teaching of Spanish. (1-3)

Supervised, practical experience in teaching Spanish at the college level. Span 326, 377 (or equivalents); graduate assistantship in department.

674. Teaching Hispanic Culture. (3)

Methods of researching and teaching Hispanic culture.

676. Assessing Language and Culture Learning. (3)

Methods of assessing language and culture learning, including the development of tests, questionnaires, portfolios, self- and peer-assessments, rubrics, and checklists.

SPANISH AND PORTUGUESE

677. Teaching Second Language Speaking and Listening. (3)

Research, theory, and techniques for teaching and assessing speaking and listening skills in a foreign/second language classroom.

678. Teaching Second Language Reading and Writing. (3)

Research, theory, and techniques for teaching and assessing reading and writing skills in a foreign/second language classroom.

679R. Seminar in Teaching Spanish. (3)

Topics vary. In-depth discussion about issues relating to language teaching and research.

680R. Directed Research in Spanish. (1-3)

Individualized study. Under direction of faculty member, designing and conducting research project that covers material not normally presented in regular course work. Research paper required. Written proposal subject to departmental approval.

698R. Master's Project. (1-6)

Candidates in nonthesis program may complete approved field project as their writing/research experience. Committee chair's consent.

699R. Master's Thesis. (0.5-9)

FACULTY

Alba, Orlando *Professor*, PhD, Universidad Complutense de Madrid, Spain, 1988. Hispanic Sociolinguistics; Dialectology

Alvord, Scott M. *Associate Professor*, PhD, University of Minnesota, 2006. Hispanic Linguistics; Phonetics; Phonology; Sociolinguistics; Language Contact; Spanish in the U.S.

Bateman, Blair E. *Associate Professor*, PhD, University of Minnesota, 2002. Teaching Culture; Language Teaching Methodology; Portuguese Pedagogy; Immersion Education

Fails, Willis C. *Associate Professor*, PhD, University of Texas, Austin, 1984. Experimental Phonetics; Spanish and Portuguese Linguistics

Garcia, Mara Lucy *Professor*, PhD, University of Kentucky, 1997. Latin American Literature; Contemporary Women Writers; Andean Writers; Fantastic Literature

Hague, Daryl R. *Associate Professor*, PhD, State University of New York, Binghamton, 2002. Translation Theory and Pedagogy

Hegstrom, Valerie *Associate Professor*, PhD, University of Kansas, 1992. Early Modern Spanish Literature; Spanish Theater Performance; Women Writers; Women's Studies

Knapp, Nieves Perez *Associate Teaching Professor*, PhD, University of Oviedo, Spain, 2003. Spanish Language and Cultures; Language Teaching Methodology; Materials Development

Krause, James R. *Assistant Professor*, PhD, Vanderbilt University, 2010. Brazilian and Spanish American Narrative and Poetry; Comparative Latin American & Inter-American Literature; Translation Studies

Laraway, David *Associate Professor*, PhD, Cornell University, 1998. Spanish American Poetry, Philosophy, Basque Literature and Culture, Borges

Larson, Erik M. *Assistant Professor*, PhD, University of California, Davis, 2012. Latin American Literature; Contemporary Southern Cone Narrative; Detective Literature and Roman Noir; Post-Dictatorial Literature; Critical Theory

Lopez-Alcala, Samuel *Assistant Professor*, PhD, Universidad Pontificia Comillas, Madrid, 2012. English into Spanish Translation and Interpreting

Martinsen, Rob A. *Associate Professor*, PhD, University of Texas, Austin, 2007. Foreign or Second Language Acquisition/Teaching Methods; Teaching and Learning Languages through Study Abroad and Technology

Montgomery, Cherice *Assistant Professor*, PhD, Michigan State University, 2009. World Language Education, Pedagogy, and Curriculum Development; Transliteracy and Social Technologies; Professional Development; Arts-informed Education and Inquiry; Teacher Preparation

Nielson, Rex *Assistant Professor*, PhD, Brown University, 2010. 19th, 20th, and 21st Century Brazilian Narrative; Portuguese and Luso-African Literature; Comparative Literature; Masculinity Studies; Ecocriticism

Pratt, Dale J. *Professor*, PhD, Cornell University, 1994. Nineteenth- and Twentieth-Century Spanish Literature; Realism; Generation of '98; Literature and Science; Theatre Performance; Comparative Literature; Science Fiction

Price, Brian *Associate Professor*, PhD, University of Texas at Austin, 2007.

Rosenberg, John R. *Professor*, PhD, Cornell University, 1985. Nineteenth- and Twentieth-Century Spanish Literature; Art and Literature

Sherman Jr., Alvin F. *Professor*, PhD, University of Virginia, 1990. Eighteenth- and Nineteenth-Century Spanish Literature; 21st Century Spanish Literature; Medieval Literature; Romanticism; Spanish Civil War

Smead, Robert N. *Associate Professor*, PhD, University of Texas, Austin, 1988. Spanish-English Language Contact; Hispanic Bilingualism; Spanish Linguistics; Variationism

Stallings, Gregory C. *Associate Professor*, PhD, University of California, Irvine, 1999. 20th and 21st Century Spanish Literature and Film

Thompson, Gregory L. *Associate Professor*, PhD, University of Arizona, 2006. Second Language Acquisition; Code-Switching in the Foreign Language Classroom; Heritage Language Learners; Service-learning and Language Acquisition; Bilingualism and Languages in Contact; Placement Exams and Language Testing

Turley, Jeffrey S. *Associate Professor*, PhD, University of California, Berkeley, 1992. Spanish Linguistics; Romance Philology; Semantics

Weatherford, Douglas J. *Associate Professor*, PhD, Pennsylvania State University, 1997. Contemporary Spanish American Narrative; Colonial Literature; Historical Novel; Hispanic Film

Williams, Frederick G. *Gerrit de Jong, Jr, Distinguished Professor of Luso-Afro-Brazilian Studies*, PhD, University of Wisconsin, 1971. Portuguese, Brazilian, and Mozambican Literatures

Williams, Lynn *Professor*, PhD, University of London, 1978. Spanish Linguistics; History of the Spanish Language; Spain as a Multilingual State; Medieval Literature; Seventeenth-Century Diplomatic History

Wilson, Mac *Assistant Professor*, PhD, Rutgers, 2015.

STATISTICS

Chair: Tolley, Dennis
Graduate Coordinator: Fellingham, Gilbert W.

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THE PROGRAMS OF STUDY

Statistics is a scientific discipline by which statisticians assist other scientists and researchers in making informed decisions in the face of uncertainty. Statisticians use skills in a variety of areas to solve problems. The application of statistics is the embodiment of the scientific method.

The statistics MS prepares outstanding students for successful and productive careers, and to enroll in the best Ph.D. programs. A firm foundation in theoretical statistics is provided and the courses offer approaches to the solution of important real-world problems.

The Statistics Integrated BS/MS program allows well-prepared students to complete both degree programs efficiently and at a lower tuition cost. Majors in the Statistical Science and Biostatistics emphases can apply for the integrated program after taking Stat 330 and Stat 340 and completing University Core requirements.

Roughly twelve students are accepted into the statistic's masters program each fall. Students are expected to complete the master's program in two years.

Statistics - MS

Requirements for Degree

Credit hours: Thesis option (30): minimum 24 course work plus 6 thesis hours (Stat 699R). Project option (33): minimum 30 course work plus 3 project hours (Stat 698R).

- Required courses: Stat 535, 536, 624, 641, 642, and 9 hours in statistics courses numbered 600 or above, excluding 698R and 699R.

- Minor (optional): any approved minor.
- Thesis or project.
- Examinations: (A) comprehensive written examination covering Stat 535, 624, 641, and 642, (B) oral defense of project or thesis.
- C+ or better in each class, with an overall cumulative 3.0 GPA in required MS degree classes.

FINANCIAL ASSISTANCE

The department has limited funds to supplement students' financial resources, and such funds are only available within departmental and university guidelines. All admitted students receive teaching or research assistantships. Some tuition support is available, and is awarded on a competitive basis

RESOURCES AND OPPORTUNITIES

Center for Collaborative Research and Statistical Consultation. The Center operates with full access to all departmental resources to provide statistical expertise to faculty, graduate students, and off-campus researchers in other disciplines. Areas of particular strength are designing experiments and sample surveys and analyzing the resulting data. Problems are solved by application and adaptation of state-of-the-art methodology and development of new methodology as required.

Computing Facilities. The Department of Statistics provides several excellent general computer laboratories furnished with computing equipment and software for statistical graphics, data analysis, and statistical computing. These laboratories are reserved for students in the department.

Department Research. Faculty members in the Department of Statistics carry out a rich variety of research programs. Research emphases include Bayesian methods, environmental and spatial statistics, reliability of industrial

STATISTICS

and computing processes, statistical genetics and bio-informatics, mixed models and longitudinal data, data mining, chemometrics, actuarial methods, design and analysis of experiments, and issues in statistical computation. In addition to these general areas, more specific research interests for individual faculty are listed in the faculty section immediately following the course descriptions.

For a more detailed description of the graduate program requirements, send for a copy of the department's bulletin or visit their website at <http://statistics.byu.edu>.

COURSE DESCRIPTION

STAT

500.(Stat-Chem-C S-Geol-Math-MthEd-Phscs) Business Career Essentials in Science and Math. (1.5)

Introduction for science, math, and statistics majors to careers in industry. Project planning, oral and written business presentations, business accounting, and technology readiness.

511.Statistical Methods for Research 1. (3)

Basic statistical methodologies and experimental design. Topics include simple analysis of variance, multiple regression, analysis of covariance, model selection. STAT 121; or equivalent.

512.Statistical Methods for Research 2. (3)

Advanced statistical methodologies and experimental design. Topics include multi-way analysis of variance, mixed models analysis of variance, logistic regression, log-linear models, time series models, principal components, canonical correlation, common experimental designs. STAT 511

531.Experimental Design. (3)

Basic designs, power and sample size, Latin squares, incomplete blocks, change-over designs, factorials, fractional factorials, confounding, split-plots, response surface designs.

STAT 330 & MATH 313

535.Linear Models. (3)

Theory of estimation and testing in linear models. Analysis of full-rank model, over-parameterized model, cell-means model, unequal subclass frequencies, and missing and fused cells. Estimability issues, diagnostics.

Departmental consent.

536.Statistical Learning and Data Mining. (3)

Weighted least squares, robust regression, regularization, dimension reduction, nonlinear regression, local regression, generalized additive models, Gaussian process regression, tree-structured regression, support vector machines, classification.

STAT 535 & STAT 624

538.Survival Analysis. (3)

Basic concepts of survival analysis; hazard functions; types of censoring; Kaplan-Meier estimates; Logrank tests; proportional hazard models; examples drawn from clinical and epidemiological literature.

STAT 340

590R.Statistical Consulting. (1-3)

Introduction to statistical consulting, oral presentations, presentation packages, written reports. Extensive applied experience in the Center for Collaborative Research and Statistical Consulting. Departmental consent.

591R.Graduate Seminar in Statistics. (0)

595R.Special Topics in Statistics. (1-3)

Instructor's consent.

595R.Statistical Computations. (1-3)

Instructor's consent.

595R.Theory of Risk. (1-3)

Instructor's consent.

599R.Academic Internship: Statistics. (1-9)

On-the-job experience. Report required.

Departmental consent.

624.Statistical Computation. (3)

Fundamental numerical methods used by statisticians; programming concepts; efficient use of software available for statisticians; simulation studies.

Departmental consent.

631.Advanced Experimental Design. (3)

Response surface methods, mixture designs, and optimal designs; fractions of two-level, three-level, and mixed-level factorials; analysis of experiments with complex aliasing; robust parameter designs. STAT 431 & STAT 535 & STAT 642

635.Mixed Model Methods. (3)

Fixed effects, random effects, repeated measures, nonindependent data, general covariance structures, estimation methods.

STAT 535 & STAT 624 & STAT 642

637.Generalized Linear Models. (3)

Generalized linear models framework, binary data, polytomous data, log-linear models.

STAT 535 & STAT 642

641.Probability Theory and Mathematical Statistics 1. (3)

Axioms of probability; combinatorics; random variables, densities and distributions; expectation; independence; joint distributions; conditional probability; inequalities; derived random variables; generating functions; limit theorems; convergence results. Departmental consent.

642.Probability Theory and Mathematical Statistics 2. (3)

Introduction to statistical theory; principles of sufficiency and likelihood; point and interval estimation; maximum likelihood; Bayesian inference; hypothesis testing; Neyman-Pearson lemma; likelihood ratio tests; asymptotic results, including delta method; exponential family.
STAT 641

651.Bayesian Methods. (3)

Basic Bayesian inference; conjugate and nonconjugate analyses; Markov Chain Monte Carlo methods; hierarchical modeling; convergence diagnostics.
STAT 536 & STAT 642

666.Multivariate Statistical Methods. (3)

Inference about mean vectors and covariance matrices; multivariate analysis of variance and regression; canonical correlation; discriminant, cluster, principal component, and factor analysis.
STAT 535 & STAT 624 & STAT 642

698R.Master's Project. (1-3)
Departmental consent.**699R.Master's Thesis. (1-6)**
Departmental consent.**FACULTY**

Berrett, Candace *Assistant Professor*, PhD, The Ohio State University, 2010. Spatial and Space-time Statistics; Bayesian Modeling, Categorical Data, Applications to the Environmental Sciences

Blades, Natalie J. *Associate Professor*, PhD, Johns Hopkins University, 2003. Infectious Disease Epidemiology; Ordinal Data Models

Christensen, William F. *Professor*, PhD, Iowa State University, 1999. Environmental and Spatial Statistics; Multivariate Analysis, Pollution Source Apportionment; Climate and Paleoclimate; Applications of Statistics in Politics and Law

Dahl, David B. *Professor*, PhD, University of Wisconsin - Madison, 2004. Bayesian nonparametrics: model-based clustering; random partition models; protein structure prediction, bioinformatics; and statistical computing

Eggett, Dennis L. *Research Associate Professor*, PhD, North Carolina State University, 1987. Linear Models; Experimental Design; Statistical Computing

Engler, David A. *Associate Professor*, PhD, Harvard University, 2007. Model Assessment in High-Dimensional Data Settings; Time Series, Applications in Finance and Environmental Science

Fellingham, Gilbert W. *Professor*, PhD, University of Washington, 1990. Bayesian Nonparametrics; Bayesian Hierarchical Models; Applications in Sports, Human Performance, and Health

Grimshaw, Scott D. *Professor*, PhD, Texas A&M University, 1989. Data Science; Process Monitoring

Hartman, Brian M. *Assistant Professor*, PhD, Texas A&M University, 2012. Bayesian methods and their applications in actuarial science and risk; Storm damage prediction for electric utilities; Healthcare claims severity modeling; Loss reserving

Heaton, Matthew J. *Assistant Professor*, PhD, Duke University, 2011. Spatio-temporal Statistics; Environmental Impacts; Uncertainty Quantification; Statistics in Epidemiology; Bayesian Modeling

Lawson, John S. *Professor*, PhD, Polytechnic Institute of New York, 1984. Design and Analysis of Experiments; Reliability Engineering; Statistical Process Control; Record Linkage

Page, Garritt L. *Assistant Professor*, PhD, Iowa State University, 2009. (Non) Parametric Bayesian Methods; Hierarchical Modeling; Spatial Statistics; Mixtures; Statistics in Sports; Statistics in Education

Reese, C. Shane *Professor*, PhD, Texas A&M University, 1999. Bayesian Hierarchical Models; Bayesian Optimal Experimental Design; Sports Statistics; Reliability; Computer Experiments; Applications of Statistics to National Security Issues; Environmental Statistics

Richardson, Robert A. *Assistant Professor*, PhD, University of California Santa Cruz, 2015. Spatio-temporal data analysis; Bayesian non-parametrics; Stochastic differential equations; Actuarial and financial models

Scott, Del T *Professor*, PhD, Pennsylvania State University, 1977. Statistical Computing; Categorical Data Analysis; Linear Models; Graphical Analysis

Tass, E. Shannon *Associate Professor*, PhD, Rice University, 2009. Biostatistics; Statistical Application in Medicine, Health, and Wildlife; Spatial Statistics and Climate

Tolley, H. Dennis *Professor*, PhD, University of North Carolina, 1974. Actuarial methods in Health, Statistical Methods in Analytic Chemistry

TEACHER EDUCATION

Chair: Tunnell, Michael O.
Graduate Coordinator: Young, Janet R.

205 MCKB, Provo, UT 84602-5099
(801) 422-2089

tedgradsec@byu.edu

<http://education.byu.edu/ted/graduate>

THE PROGRAMS OF STUDY

The Department of Teacher Education offers one graduate program, a Master of Arts (MA) in Teacher Education. The aim of the Master of Arts (MA) program in Teacher Education is to provide a rigorous program focused on inquiry that prepares candidates to improve their practice as teachers, become teacher leaders in schools, districts, and other educational settings, and prepare for doctoral studies or other advanced scholarship.

Teacher Education - MA

The master's program is a two-year, evening and summer-intensive program for the working professional. Students move through their course work as a cohort and complete course work on the BYU campus.

The curriculum is both theory and practice based. The teacher education core provides teachers with an understanding of the theories and practices related to their professional assignment and space for considering their role as educators. The research core includes courses in research methods, statistics, qualitative data analysis, and culminates in a thesis.

Requirements for Degree

Credit hours: 33: 27 hours plus 6 hours of thesis (T Ed 699R)

- **Core:** T Ed 610, 611, 612, 613
- **Required research courses:** T Ed 691, 692, 693

- **Electives:** T Ed 603, 604, 620, 621, 622, 623, 624, 625, 640, 642, 643, 644, 653R, 654R, 660, 661, 663R, 665, 680, 681, 682, 683, 685 or approved graduate level courses in other departments.

- **Thesis:** T Ed 699R

- **Examinations:** oral defense of course work and oral defense of thesis (consult department for details)

FINANCIAL ASSISTANCE

Financial assistance for tuition, books, travel or other expenses is granted to graduate students in the Department of Teacher Education as university funding permits. A limited number of research assistantships may also be funded through faculty research grants.

RESOURCES AND OPPORTUNITIES

Computer laboratories on campus provide students with internet access and assistance with electronic thesis submission. Mac and Windows computers in the laboratories also provide graduate students with a variety of computer software packages. All computers have access to myBYU and Learning Suite which provide services such as e-mail and class discussion groups.

Graduate student office space is available for graduate students who are working with faculty on research, evaluation, and development projects.

COURSE DESCRIPTION

T ED

603.Content-Area Literacy Instruction. (3)

Content-area instructional strategies attuned to vocabulary, concept development demands, nature of content-area texts. Issues of negotiating and creating texts in content-area disciplines.

Membership in teacher education cohort or instructor's consent.

604.Education for Democracy. (3)

The public purposes of education, including preparing students for active participation in a democracy. Membership in teacher education cohort or instructor's consent.

610FOUNDATIONS OF Teacher Education. (3)

Issues and contending viewpoints about issues currently shaping the discourse about teaching and teacher education in America.

Acceptance in MA in Teacher Education program or instructor's consent.

611.Theories of Learning and Teaching. (3)

Seminal theories of learning in relationship to the practice of teaching and schooling. Acceptance in MA in Teacher Education program or instructor's consent.

612.Teacher Learning, Development, and Mentoring. (3)

The nature of curriculum design for potentially educative environments. Acceptance in MA in Teacher Education program or instructor's consent.

613.Curriculum Theory, Design, and Assessment. (3)

The nature of curriculum design for potentially educative environments. Acceptance in MA in Teacher Education program or instructor's consent.

620. Foundations of Literacy. (3)

Historical and theoretical perspective of literacy-related issues and challenges. Implications for making well-informed decisions that benefit all students. Membership in teacher education cohort or instructor's consent.

621. Literature for Young People. (3)

Overview of fiction and nonfiction literature for elementary and secondary school students (K-12); authors, current trends, and cross-curriculum classroom applications. Membership in teacher education cohort or instructor's consent.

622. Literacy Development and Instruction. (3)

Emergent, early, and adolescent literacy development; ideas for constructing appropriate literacy learning environments, experiences, and instructional interventions for students pre-K-12. Membership in teacher education cohort or instructor's consent.

623. Reading Comprehension Instruction. (3)

Current theories and models of reading comprehension. Implications for comprehension instruction considering cultural, linguistic, and cognitive differences; curriculum; curriculum integration; motivational strategies. Membership in teacher education cohort or instructor's consent.

624. Writing Instruction. (3)

Writing development, including spelling, handwriting, and vocabulary. Instructional practices for teaching the writing process, integrating reading, listening, speaking, and assessment. Membership in teacher education cohort or instructor's consent.

625. Literacy Assessments and Interventions. (3)

Formal and informal assessment procedures. Appropriate instructional interventions for students of varying ages, performance levels, and linguistic abilities, particularly struggling students. Membership in teacher education cohort or instructor's consent.

640. Foundations in Physical Education Teacher Education Research. (3)

Theory and application of roles of teacher education in research, teaching, and clinical evaluation. Acceptance into the T Ed MA program.

642. Curriculum and Instructional Theory and Design in Physical Education. (3)

Theories, concepts, and practices associated with design and delivery of physical education in the public schools and in physical education teacher education. Acceptance into the T Ed MA program.

643. Physical Education for Special Populations. (3)

Theoretical and practical aspects of teaching individuals with disabilities in the physical education setting. Acceptance into the T Ed MA program.

644. Advocacy in Physical Education Teacher Education. (3)

History, concepts, issues, current trends, and professional practices associated with becoming an effective advocate for physical education at local, regional, and national levels. Acceptance into the T Ed MA program.

653R. Learning and Teaching in Early Childhood Education. (3)

Learning and teaching within or across disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

653R. Learning and Teaching in English Language Learners (ELLs). (3)

Learning and teaching within or across disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

653R. Learning and Teaching in Mathematics Education. (3)

Learning and teaching within or across disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

653R. Learning and Teaching: Cultural Responsive Teaching. (3)

Learning and teaching within or across disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

653R. Learning and Teaching in the Disciplines. (3)

Learning and teaching within or across disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

TEACHER EDUCATION

654R.Issues and Trends in Physical Education Teacher Education (PETE). (3)

Contemporary trends and issues within and across educational disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

654R.Issues and Trends in Early Childhood Education. (3)

Contemporary trends and issues within and across educational disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

654R.Issues and Trends in Education. (3)

Contemporary trends and issues within and across educational disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

654R.Issues and Trends in Mathematical Education. (3)

Contemporary trends and issues within and across educational disciplines. Focus of the course selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

660.History of Teaching and Teacher Education. (3)

History of teaching as a cross-generational social and cultural activity; teacher education as a professional practice with present-day educational implications. Membership in teacher education cohort or instructor's consent.

661.Classroom as Culture and Knowledge System. (3)

Classrooms as culture and knowledge systems and how those systems are created and sustained over time. Membership in teacher education cohort or instructor's consent.

663R.Seminar in Equity, Power, and Privilege. (3)

Exploration of special topics related to teacher education. Topics selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

663R.Seminar in Second Language Acquisition. (3)

Exploration of special topics related to teacher education. Topics selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

663R.Seminar in Multiple Literacies and Semiotics. (3)

Exploration of special topics related to teacher education. Topics selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

663R.Seminar in Teacher Education. (3)

Exploration of special topics related to teacher education. Topics selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

663R.Seminar in Physical Education Teacher Education (PETE). (3)

Exploration of special topics related to teacher education. Topics selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

663R.Seminar in STEM. (3)

Exploration of special topics related to teacher education. Topics selected in consideration of student interests and needs, and contribution to program learning outcomes. Acceptance in MA in Teacher Education program or instructor's consent.

665.Best Practices in Teacher Education. (3)

Teacher education curriculum; theories and research that support current practice; improving that practice. Membership in teacher education cohort or instructor's consent.

680.Historical Foundations of STEM Education. (3)

Historical and philosophical foundations of the STEM education disciplines, including socio-cultural, economic, and political influences. Acceptance into MA in teacher education program or instructor's consent.

681.The Nature of STEM Discourse and Participation. (3)

The nature of various STEM disciplines; how individuals learn, know, communicate, and participate within and between STEM disciplines given contemporary theories of learning and teaching. Acceptance into MA in teacher education program or instructor's consent.

682.Advanced STEM Education Pedagogy. (3)

Inquiry-based pedagogies characteristic of STEM education applying contemporary theories of teaching and learning. Integrating STEM disciplines through a variety of instructional strategies and models.

Acceptance into MA in teacher education program or instructor's consent.

683.Advanced STEM Education Curriculum and Development. (3)

Strategies for teaching a variety of topics. Developing and implementing integrated STEM curricula.

Acceptance into MA in teacher education program or instructor's consent.

685.Research and Assessment in STEM Education. (3)

Contemporary modes of assessment and evaluation in STEM education and research. Complementing and extending traditional modes of assessment and evaluating quality, analyzing trends, and drawing conclusions regarding the effects of STEM education on student learning.

Acceptance into MA in teacher education program or instructor's consent.

691.Introduction to Educational Research. (3)

Exploring the processes of educational research. Provides a survey of educational research methodologies.

Acceptance in MA in Teacher Education program or instructor's consent.

692.Quantitative Data Analysis. (3)

Quantitative data analysis preparing students to design, conduct, and interpret statistical analyses in educational research. T Ed 691 or approved equivalent; acceptance in MA in Teacher Education program or instructor's consent

693.Qualitative Data Analysis. (3)

Introduction to methods of qualitative inquiry for teachers studying their own and others' practice or other issues in education. T Ed 691 or approved equivalent; acceptance in MA in Teacher Education program or instructor's consent.

698R.Action Research Project. (1-6)

Developing, observing, gathering, interpreting, and reporting data from action research project. Two project credit hours must be taken during semester of project defense.

699R.Master's Thesis. (0.5-2)

Formal report/defense of substantive research, evaluation, or curriculum project that makes original contribution to field. Thesis credit hours distributed and accompanied by seminars.

FACULTY

Bahr, Damon L. *Associate Professor*, EdD, Brigham Young University, 1988. Mathematics Education, Curriculum and Instruction, Assessment

Barney, David *Associate Professor*, EdD, Florida State University, 2002. Physical Education Teacher Education

Black Hultz, Alaska *Assistant Professor*

Bullough Jr., Robert V. *Professor*, PhD, Ohio State University, 1976. Teacher Education

Bybee, Eric *Assistant Professor*

Cutri, Ramona M. *Associate Professor*, PhD, University of California, Los Angeles, 1997. Multicultural Education

Draper, Roni Jo *Professor*, PhD, University of Nevada, Reno, 2000. Literary Education, Teacher Education, Research Design

Erickson, Lynnette B. *Associate Professor*, PhD, Arizona State University, 1996. Social Studies Education, Teacher Education

Feinauer, Erika *Assistant Professor*, EdD, Harvard University, 2006. Literacy Education

Hall-Kenyon, Kendra *Associate Professor*, PhD, Columbia University, 2002. Early Childhood Education, Literacy Education, Teacher Education

Jensen, Bryant *Assistant Professor*, PhD, Arizona State University, 2009. Multicultural Education

Korth, Byran B. *Assistant Professor*, PhD

Leavitt, Teresa A. *Associate Teaching Professor*, PhD

Monroe, Eula E. *Professor*, EdD, George Peabody College for Teachers of Vanderbilt University, 1980. Mathematics Education, Curriculum and Instruction

Morrison, Timothy G. *Associate Professor*, PhD, University of Illinois, 1986. Literacy Education, Teacher Education

Newberry, Melissa *Assistant Professor*, PhD, The Ohio State University, 2008. Adolescent Development

Nixon, Ryan *Assistant Professor*

Pennington, Todd R. *Associate Professor*, PhD, Virginia Tech, 1998. Curriculum and Instruction - Sport Pedagogy

Pinnegar, Stefinee E. *Associate Professor*, PhD, University of Arizona, 1989. Teacher Education, TESOL

Prusak, Keven A. *Associate Professor*, PhD, Arizona State University, 2000. Physical Education Teacher Education

Richardson, Michael J. *Assistant Professor*, PhD, Brigham Young University, 2009. Adolescent Development

Rosborough, Alex *Assistant Professor*, PhD, University of Nevada, Las Vegas, 2010. Multicultural Education, TESOL

TECHNOLOGY

Smith, Leigh *Associate Professor, PhD,*
University of Utah, 2002. Science
Education, Teacher Education

Tunnell, Michael O. *Professor, EdD,*
Brigham Young University, 1986.
Children's Literature

Wentworth, Nancy *Associate
Professor, PhD*

Whiting, Erin Feinauer *Assistant
Professor, PhD,* University of
Missouri-Columbia, 2006.
Multicultural Education,
Inequality, Home, Family and
Community Connections to
Schools, Community Studies

Wilkinson, Carol *Associate Professor,*
EdD, Brigham Young University,
1983. Physical Education Teacher
Education

Wimmer, Jennifer *Assistant Professor,*
PhD, University of Nevada,
Las Vegas, 2010. Content Area
Literacy, Literacy Education,
Teacher Education

Young, Janet R. *Associate Professor,*
PhD, University of Oklahoma,
1996. Literacy Education, Teacher
Education

Young, Terrell A. *Professor, PhD*

TECHNOLOGY

Chair: Lunt, Berry M.

Graduate Coordinator: Farnsworth,
Clifton B.

265 CTB, Provo, UT 84602-4206
(801) 422-6300
<http://www.et.byu.edu/sot>

THE PROGRAMS OF STUDY

The Master of Science in technology degree is designed to develop leaders to respond to the needs of a technology-based society for advanced technical, managerial, and educational personnel. Graduate level leadership and technology application capabilities are developed through rigorous courses and in-depth research and development experiences. The MS in technology provides opportunities for students to engage in applied technical research that adds to the knowledge of relevant practice or solves problems that arise in the workplace.

One degree is offered through the School of Technology: Technology-MS.

Technology - MS

The School of Technology, an academic unit in the College of Engineering and Technology, provides a Master of Science degree with specialization in Construction Management, Information Technology, Manufacturing Systems, or Technology and Engineering Education. Twenty-six faculty professionals having diverse educational and experiential backgrounds provide strong research expertise and student mentoring. The faculty members are well-published, belong to professional societies, and are involved in developing and commercializing recognized software and hardware products used throughout the world.

Requirements for Degree.

The technology MS degree must be completed within three years.

- Credit hours: 24 minimum approved course hours plus 6 thesis hours (Tech 699R).
- Required courses: Tech 638, 699R.
- Specialization: minimum 21 hours from approved courses in the area of study. An approved study list is required.
- Examination: Oral defense of thesis.

Construction Management

Advisor: Clifton Farnsworth

The master's degree offered by Brigham Young University's School of Technology, with an emphasis in construction management, is designed for students who are interested in deepening and broadening their knowledge of construction management beyond their undergraduate CM degree through a rigorous graduate program that includes research at the forefront of the discipline. The MS degree provides excellent preparation for professional practice and a solid foundation for those interested in continuing their graduate studies. Applicants are encouraged to become familiar with the research interests of graduate faculty members in construction management.

Students enrolling in the CM master's program immediately following their undergraduate studies are strongly encouraged to fulfill a professional work experience (or internship) within the industry prior to entering the graduate program. Students are also encouraged to fulfill an internship as part of their graduate experience.

- Required courses: CM 555, CM 600, CM 630, CM 640, CM 650.
- Approved electives: 6 credit hours.

Information Technology

Advisor: Kevin Tew

Those qualifying for this specialization prepare for information technology (IT) leadership positions in an organization of their choice. The curriculum addresses the many applications and developments of IT, focusing on those in science, engineering, and technology. The MS degree is awarded to students who have mastered a professional level of education in core and related areas of information technologies.

- A minimum of 21 graduate hours approved by your committee, including at least 12 hours from the IT emphasis courses (IT 500 or IT 600 level).

Manufacturing Systems

Advisor: Charles Harrell

Students who have graduated in manufacturing engineering technology or related technical areas will find that this specialization is an opportunity to prepare for a career in a rapidly growing field. Increased international focus on productivity, quality, and automation has thrust the most advanced concepts of technology and management directly into the manufacturing arena. The critical need for integrating and applying these concepts into manufacturing systems is central to this specialization.

- A minimum of 21 graduate hours approved by your committee, including at least 18 hours from the MS emphasis courses (Mfg 500 or Mfg 600 level courses).

Technology and Engineering Education

Advisor: Geoffrey Wright

The technology and engineering education specialization helps students who have graduated in technology and/or engineering teacher education or related areas to be more effective leaders. The opportunity will be theirs to achieve

knowledge and skills for leadership in teaching, supervising, and managing in schools or industry. Through a research-oriented thesis, students will develop writing and research abilities related to technology and engineering education.

- Required courses: Stat 511, TEE 610, 625, 675.
- Approved electives: 11 hours, based upon committee approval.

FINANCIAL ASSISTANCE

The School of Technology offers a limited number of scholarships. Application for financial aid is made through the program's graduate coordinator.

RESOURCES AND OPPORTUNITIES

Nationally recognized instructional laboratories are available to provide students with the most current concepts, curriculum, software, equipment, and laboratory instructional/ physical organization.

COURSE DESCRIPTION

CFM

555.Construction Company Financial Management. (3)

An in-depth review of management concepts and financial strategies needed to successfully grow and enhance profitability of a construction company. Topics include business entities, budgeting and cash management, finance and investments, accounting, financial statements, cost controls (variance and earned value analysis), real estate investing, taxation, break even analysis and capital budgeting. CFM 445

600.Trends and Issues in Managing Construction. (3)

Current political, regulatory, technological, environmental, and leadership trends and issues.

630.Managing Human Resources in Construction Companies. (3)

Managing human resources in construction companies including hiring, firing, retention, training and employee development motivation, incentives, personality profiles and company culture.

640.Managing Risk in Construction. (3)

Managing the factors that create risk in a construction company, including contract administration, ethical practices, safety, international risks, insurances, and bonding. CFM 385

650.Construction Company Development and Strategic Planning. (3)

Advanced topics in the development of construction companies, including strategic planning, negotiations, banking relations, successful companies, risk management, productivity, trending and forecasting, zoning and development, entitlements, career balance, and sub-contract and resource management. CFM 445

695R.Special Topics in Construction Management. (3)

Based on needs, interest, and significance, topics important to leaders and managers in the construction industry.

IT

515R.Special Topics in Information Technology. (1-3)

New topics in information technology for graduate and undergraduate students. Standard lecture and lab format.

529.Advanced Networking. (3)

Analyzing, selecting, configuring, monitoring, and managing of computer network equipment. SNMP-based monitoring and control in process of fault isolation and root cause analysis. IT 344, 347; or equivalents.

548.Mechatronics. (3)

Synergistic application of mechanical devices, electronic controls, and cyber-system principles. Design of integrated systems that interact between the real world and the IT cyber-space environment. Advanced applications of automation and control. Instructor's consent.

555.Advanced Human-Computer Interaction. (3)

Advanced techniques for designing, prototyping, building, and evaluating technology-mediated user experiences. Human-computer interaction research methods including experimental design. Ethics of working with human subjects. HCI theories and best practices. IT 355; or instructor's consent.

566.Digital Forensics. (3)

Fundamentals of digital forensics, legal issues, evidence, chain of custody, media analysis, incident response, corporate forensics, and network forensics. IT 466 or concurrent enrollment or equivalent.

567.Cyber Security and Penetration Testing. (3)

Advanced computer systems security. Vulnerabilities and exploits. System and network attacks. Ethical hacking and penetration testing. Cyber security, cyber weapons, and advanced persistent threats. Legal and regulatory requirements for security and privacy. IT 466 or C S 465 or IS 560; or equivalent content course from another institution; or concurrent enrollment.

670.Web and Social Media Analytics. (3)

Techniques for managing, exploring, visualizing, and analyzing web and social media data including social network analysis, search engine optimization, ethical treatment of social data, and web analytics research methods. IT 350 & IT 355; or instructor's consent.

695R.Information Technology Special Topics. (0.5-4)

Unique topics in information technology for graduate students only. Independent study with a faculty mentor. Departmental and instructor's consent.

MFG

531.Advanced Computer-Aided Manufacturing Programming. (3)

CAD/CAM programming techniques and requirements for manufacturing components on computer numerical-control machine tools, emphasizing CAM programming, postprocessors, and CAM software evaluation. MFG 230 or previous CNC programming experience, or instructor's approval.

532.Manufacturing Systems. (3)

Analyzing lean manufacturing systems. Numerous examples and case studies from industry demonstrating principles of lean production, inventory management, and lean distribution. Project with a local company to gain confidence with these principles in an industrial setting. Mfg 480 or instructor's consent.

533.Manufacturing Information Systems. (3)

Applying and integrating software and information technologies in planning, executing, and monitoring production operations. Mfg 480 or instructor's consent.

555.Composite Materials and Processes. (3)

Structure, processing, properties, and uses of composite materials, including various manufacturing methods and the relationship between properties and fabrication. Graduate standing or instructor's consent.

574.Advanced Tool Design. (3)

Advanced design of net-shape products utilizing CAD and CAE methods. Plastic injection mold design and construction. Rapid prototyping and injection molding project. MFG 431

575.Packaging Technologies. (3)

Fundamentals of packaging technologies; materials, design and processes. Understanding of the importance and role of packaging in the manufacturing and product environment. Combined instruction and hands-on project application of the various aspects of packaging materials, design, and processes through individual and team assignments, written reports, and oral presentations. IT 318 & MFG 431

580.Manufacturing Simulation. (3)

Design and optimization of manufacturing systems using simulation. Simulation languages and modeling methodology. MFG 480

695R.Manufacturing Engineering Technology Special Topics. (0.5-4)

Topics arranged in consultation with instructor. Departmental and instructor's consent.

TECH

601.Research and Development in Technology. (3)

Success strategies in graduate programs. Identifying appropriate direction of research and study. Research tools as aids in decision making: strategies, literature, logic, survey techniques, research design, statistics, computers. Preparing proposals for research papers and thesis research; organizing first three thesis chapters.

638.Technology Leadership. (3)

Strategic planning and policy development. Theoretical and practical leadership aspects of conceptual and implementation processes. Articulation and team building among various organizations. Ethics and conflict resolution. Developing and implementing solutions to special problems; advanced skills/concepts in traditional and emerging technology areas.

695R.Technology Special Topics. (0.5-9)

Topics arranged in consultation with instructor.
Instructor's and departmental consent.

699R.Master's Thesis. (0.5-9)

Departmental consent.

TEE**593R.Workshop in Applied Technology Education. (0.5-2)**

Teaching and learning technological literacy skills. Reviewing and participating in current technological advances, with a focus on teaching practice and methods.

610.History and Philosophy of Technology Education. (2)

Historical and philosophical basis of today's technology programs.

625.Teaching and Learning in Technology Education. (2)

Identifying, developing, and implementing instructional strategies unique to technology education.

635.Facility Design for Applied Technology Programs. (2)

Developing instructional facilities and educational specifications for vocational and technology laboratories.

675.Grant Writing and Publishing in Technology and Engineering Education. (3)

Grant writing and publishing as it applies to education - specifically K-12 environments and technology and engineering education. Graduate standing.

695R.Technology and Engineering Education Special Topics. (0.5-3)

Topics arranged in consultation with instructor.
Departmental and instructor's consent.

FACULTY

Bingham, Evan D. *Assistant Professor, PhD*

Christensen, Kip W. *Professor, PhD, Colorado State University, 1991. Teacher Education*

Christofferson, Jay P. *Professor, PhD, Colorado State University, 1996. Computerized Systems in Construction Management*

Ekstrom, Joseph J. *Associate Professor, PhD, Brigham Young University, 1991. Network Management, Switching, Routing; Software/Hardware Systems Development and Modeling*

Farnsworth, Clifton *Assistant Professor, PhD, University of Utah, 2008.*

Fry, Richard E. *Associate Professor, MFA, University of Illinois, 1994. Product Industrial Design*

George, Andrew R. *Assistant Professor, PhD, University of Stuttgart, 2011. Plastics and Composites Materials; Modeling, Simulation, and Optimization*

Hansen, Derek *Assistant Professor, PhD, University of Michigan, 2007. Social Media; Social Network Analysis; Human-Computer Interaction*

Hawks, Val D. *Associate Professor, PhD, Gonzaga University, 2005. Leadership; Global Issues; Quality; Ethics*

Helps, C. Richard G. *Associate Professor, MSc Eng, Witwatersrand University Johannesburg*

Howell, Bryan *Associate Professor, MFA, University of Texas, Austin, 2003. Industrial Design*

Hutchings, Mark D. *Associate Professor, PhD, Texas A&M University, 2002. Construction Company Management; Legal Aspects of Construction; Real Estate, Investment, and Development*

Lunt, Barry M. *Professor, PhD, Utah State University, 1993. Long-Term Digital Data Storage*

Miles, Michael P. *Professor, PhD, Ecole des Mines de Paris, 1995. Lean Manufacturing; Materials Science; Finite Element Analysis*

Miller, Kevin R. *Associate Professor, PhD, Arizona State University, 2001. Construction Estimating with Electronic Documents*

Rowe, Dale C. *Assistant Professor, PhD, University of Kent, 2010. Identity, Biometrics, and Security*

Shumway, Steven L. *Associate Professor, PhD, Utah State University, 1999. Student Learning and Motivation Theory*

Skaggs, Paul T. *Associate Professor, MFA, Rochester Institute of Technology, 2002. Interior Design*

Teng, Chia Chi *Associate Professor, PhD, University of Washington, 2007. Computer Vision; Biomedical Informatics; Biomedical Image Processing*

Tew, Kevin *Assistant Professor, PhD, University of Utah, 2013. Computer Networks and Databases*

Weaver, Jason M. *Assistant Professor, PhD*

Weidman, Justin E. *Assistant Professor, PhD, Virginia Tech, 2012. Construction Means & Methods and Safety Education*

Wright, Geoffrey A. *Assistant Professor, PhD, Brigham Young University, 2008. Technology Engineering Education*

THEATRE AND MEDIA ARTS

Chair: Hollingshaus, Wade
Graduate Coordinator: Jones, Megan Sanborn

D-581 HFAC, Graduate Secretary:
Lindsi Nielson
(801) 422-3750
lindsi_neilson@byu.edu
<http://cfac.byu.edu>

THE PROGRAMS OF STUDY

This program is a scholarly two-year degree. Students should be in residence for the duration of the program. The coursework consists of a core of history/theory classes supplemented by electives chosen by the student in conjunction with her/his advisor. The program wraps up with comprehensive exams and the writing of a solid scholarly thesis. There are two possible emphases: Theatre History and Critical Studies, or Media Arts Education.

The Theatre History and Critical Studies emphasis is meant to springboard students into either teaching at the community college level or further graduate studies at a PhD level. It includes intensive reading of dramatic literature and contemporary scholarship, critical study of both linguistic and social theories, writing for presentation and publication, and opportunities for dramaturgy training. The best writing samples for the application are papers dealing with critical analysis of theatre. They could be advanced undergraduate papers or published articles.

While we encourage our Master's students to support their academic endeavors with practical theatre (or more limited media arts) experience, *the program is centered on scholarship, not on production.*

The Media Arts Education emphasis is primarily designed for students who are already full-time secondary education teachers or individuals who would like to pursue a PhD in media education. Students who are interested in educational outreach and media literacy advocacy in various public settings should apply. Most classes are offered in the evening and during the spring and summer. Writing samples for the application should be advanced undergraduate research or analytical essays.

Media and Performance Studies - MA

Requirements for Degree

Credit hours (32): 14 hours required courses, minimum 12 elective hours, and minimum 6 thesis hours (TMA 699R).

- Required courses: TMA 590R, 620, 651, 652, 668R.
- Elective courses: 12 hours of electives, chosen in consultation with the student's advisor and subject to approval of the department's graduate council. One or more of these may be additional TMA graduate seminars (TMA 590R).
- Thesis: The thesis must make a genuine contribution to body of knowledge and meet highest academic standards. Three kinds of thesis research will be accepted: (A) scholarly analysis of media and/or performance studies history, theory, or criticism; (B) research and strong creative achievement in media and/or performance studies; (C) qualitative research including action research.
- Examinations: (A) comprehensive written examination; (B) comprehensive oral examination; (C) oral defense of thesis.

FINANCIAL ASSISTANCE

The following financial support is available through the Department of Theatre and Media Arts:

Assistantships. Graduate students may work in many areas, including performance, production, research, and teaching. Applicants must have appropriate background and experience to be considered. Assistantships range up to half-time; pay is based on applicant's experience, year in school, and the type of assistantship.

Supplemental Tuition Awards. Supplemental tuition awards are offered by the department during all semesters and terms. The size of these awards is determined by the applicants' qualifications and the availability of funds.

COURSE DESCRIPTION

TMA

515R.Special Projects 3. (1-6)

Advanced special projects in theatre or media arts. Theatre and media arts students: by application.

515R.Special Projects 3: Media. (1-6)

Advanced special projects in media arts. Theatre and media arts students: by application.

536R.Directing Workshop. (0.5-3)

Advanced experience in directing. TMA 436; application required.

551R.Playwriting 4. (3)

Workshop course designed to assist more advanced students in furthering their playwriting skills by writing or rewriting a play. TMA 451 or instructor's consent.

561R.Stage Management Project. (1-6)

Hands-on training for student stage managers through assigned realized productions, including supervision through full positions on stage and media productions. Department-arranged assignments. TMA 461R. Theatre arts studies major or minor status. Instructor's consent.

590R.Master Seminar. (3)

Special topics seminar on topics relevant to the fields of media and/or performance studies. Instructor's consent.

599R.Academic Internship: Media. (1-9)

Off-campus experience or internship in media arts. TMA 112 & TMA 114 & TMA 185; by application only.

599R.Academic Internship. (1-9)

Off-campus experience or internship in theatre or media arts. Theatre students: TMA 115; by application only. Media students: TMA 112 and 114 and 185/105; by application only. TMA graduate student: by application only.

602.Theatre History and Theory 3: 19th - 21st Centuries. (3)

Theatre history sites--nineteenth through twenty-first centuries--emphasizing existing archives, representative texts and cultural documents, and contemporary criticism. TMA graduate student status or instructor's consent.

610.Dramaturgy 1. (3)

Graduate-level research and application of hands-on theatrical skills in four critical studies areas: literary management, production dramaturgy, new play development, educational outreach. TMA graduate student status or instructor's consent.

611.Dramaturgy 2. (3)

Develop further research and hands-on theatrical skills in four critical studies areas: literary management, production dramaturgy, new play development, educational outreach. TMA 610

612R.Production Dramaturgy. (1-3)

Experience as lead dramaturg for main-stage productions; building casebooks and overseeing audience education efforts. Rehearsal and production meeting attendance required. TMA 610 & TMA 611; and instructor's consent.

616.Theatre and Media Arts Instruction. (1)

Developing teaching methods and techniques for instruction in theatre and media arts classroom. TMA graduate student status or instructor's consent.

620.Introduction to Graduate Studies in Theatre and Media Arts. (3)

Introductory seminar required of all graduate students during first semester or term that class is offered. TMA graduate major status.

620.Introduction to Graduate Studies: Media. (3)

Introductory seminar required of all graduate students during first semester or term that class is offered. TMA graduate major status.

620.Introduction to Graduate Studies: Theatre. (3)

Introductory seminar required of all graduate students during first semester or term that class is offered. TMA graduate major status.

651.Media and Performance History and Theory 1. (3)

Media and Performance history sites - beginnings through 1900 - emphasizing existing archives, representative texts and cultural documents, and contemporary criticism. TMA Graduate Major Status.

THEATRE AND MEDIA ARTS

652. Media and Performance History and Theory 2. (3)

Media and Performance history sites - 1900-today - emphasizing existing archives, representative texts and cultural documents, and contemporary criticism.
TMA Graduate Major Status.

668R. Special Studies in Theatre or Media Arts. (1-3)

Supervised research in selected historical, theoretical, or critical problems.
Instructor's consent.

671R. Advanced Directing. (3)

Theories and techniques of directing for the stage through directing projects for public presentation.
Instructor's consent.

674R. Projects in Theatre or Media Arts. (1-4)

Supervised applied theory in playwriting/screenwriting, directing, acting, design, criticism, stagecraft, or curriculum design.
TMA graduate major status.
Instructor's consent.

680. Media Production Experience for Secondary Teachers. (3)

Basics of film and video production as they apply to the secondary classroom/student.
TMA graduate major status.

687. Pedagogical Theory and Methods of Media Instruction. (3)

Educational methods and techniques for addressing media in the secondary classroom; educational models and theories related to cultural and historical representations of media technologies.
TMA graduate major status.

691. Screens Theory. (3)

Identifying and analyzing similarities and discontinuities in moving images, from classical film through digital media.
TMA graduate major status.

699R. Master's Thesis. (1-9)
TMA graduate major status.
Instructor's consent.

FACULTY

Barber, Brad *Associate Teaching Professor, MFA, University of Southern California, 2005. Media Arts Production*

Duncan, Dean *Associate Professor, PhD, University of Glasgow, Scotland, 1999. Film History; Theory; Criticism*

Heiner, Barta *Professor, MFA, American Conservatory Theatre, 1977. Acting; Directing*

Hollingshaus, Wade *Associate Professor, PhD, University of Minnesota, 2008. Theatre History/ Theory/Criticism; Dramaturgy; Performance Studies*

Jensen, Amy Petersen *Professor, PhD, University of Illinois at Urbana Champaign, 2003. Media Education; Secondary Education*

Jones, Megan Sanborn *Associate Professor, PhD, University of Minnesota, 2003. Theatre History/ Theory/Criticism*

Larsen, Darl *Professor, PhD, Northern Illinois University, 2000. Film History; Genres; Asian Cinemas; History of Animation; Screenwriting*

Livingston, Lindsay *Assistant Professor, PhD, CUNY Graduate Center, 2013. Theatre History/ Theory/Criticism; Performance Studies*

Nelson, George D. *Professor, MFA, University of Washington, 1979. Child Drama; Secondary Education*

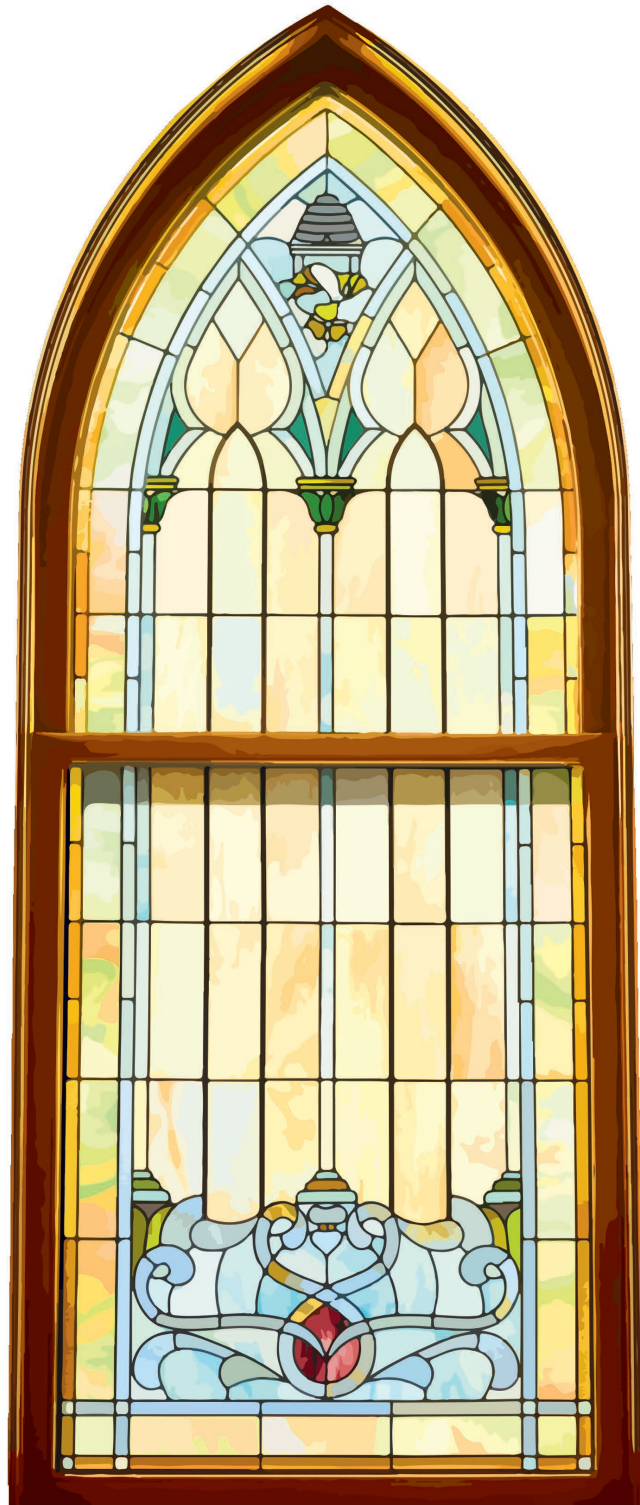
Parkin, Jeffrey L. *Associate Teaching Professor, MFA, University of Southern California, 1991. Media Arts Production*

Scanlon, Rory R. *Professor, MFA, University of Illinois, 1984. Set and Costume Design; Costume History; Lighting Design*

Sorensen, Rodger D. *Professor, PhD, University of Texas at Dallas, 1999. Directing*

Swenson, Sharon *Assistant Professor, PhD, University of Utah, 1993. Film History; Theory; Criticism*

Thevenin, Benjamin *Assistant Professor, PhD, University of Colorado, 2012. Media Arts Critical Studies*



GRADUATE STUDIES

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